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### **3.0 AFFECTED ENVIRONMENT**

#### **3.1 LOCATION, SETTING, AND HISTORICAL USE**

The proposed project area is located in north-central Sweetwater County north of Interstate 80, approximately 10 mi north of Point of Rocks, approximately 25 mi east of Rock Springs, and approximately 70 mi west of Rawlins, Wyoming (refer to Figure 1.1). Topography within the proposed project area ranges from flat to rolling, dissected by small ephemeral drainage channels. Elevations within the proposed project area range from a low of approximately 6,800 ft above mean sea level along the southwestern boundary of the property to approximately 7,080 ft above mean sea level along the Continental Divide near the center of the property.

The TMRT area lies on the eastern flank of the Rock Springs uplift within the Great Divide Basin physiographic province (Knight 1994). The proposed project area also straddles the Continental Divide, with the southern portion of the TMRT area draining into the Green River drainage basin and the northern portion of the TMRT draining into the closed Great Divide Basin drainage system (Blackstone 1988).

Climate in the project area is typical of high deserts of the intermountain west (Knight 1994). Record high and low temperatures at the Bitter Creek weather station (approximately 17 mi south of the TMRT area) are 103°F and -46°F, respectively, with an average of approximately 5 days per year above 90°F. Summer temperatures range widely, typically with warm sunny days and cool nights. During winter nights, temperatures fall to 0°F or below an average of about 30 days per year. The area has approximately 200 days per year with minimum temperatures at or below 32°F, and there are an average of approximately 100 frost-free days a year in the north-central Sweetwater County. The proposed project area receives approximately 6 to 8 inches of precipitation per year, and the prevailing winds are from the southwest with an average annual wind speed of approximately 12 mi per hour (Martner 1986).

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The proposed project area has historically been utilized for livestock grazing, wildlife habitat, and recreational hunting. This area provides limited winter grazing for cattle, sheep, and horses. However, stocking rates are low primarily due to sparse vegetation (Soil Conservation Service [SCS] 1988).

### **3.2 CRITICAL ELEMENTS**

Critical elements of the human environment as defined by the BLM (1988 and 1999c), their status in the proposed project area, and their potential to be affected by the Proposed Action or No Action alternative is presented in Table 3.1. BLM resource specialists have determined that six of the 14 critical elements of the human environment are not present in the area, are not affected by the Proposed Action or alternatives of this EA, and are not discussed further. Seven critical elements (air quality; cultural resources; Native American religious concerns; TEC&P species; invasive species; wastes [hazardous and solid]; water quality; and wetlands/riparian areas) are present in the proposed project area, may be affected by the Proposed Action or alternative, and are discussed in detail in this EA.

Based on comments received from the public during a BLM-sponsored open house for the Proposed Action on January 17, 2002, and additional existing information concerning the proposed project area, BLM resource specialists have determined that this EA will also analyze potential impacts of the Proposed Action and alternatives on geology and geologic hazards, minerals (solid and fluid), health and safety (transportation), land resources and use, noise, rangeland and livestock grazing, recreation, socioeconomics, soil resources, special status flora and fauna, vegetation, wild horses, and wildlife. Other resources (e.g., forested area/products, visual resources, water rights, etc.) have been determined not to be affected by the proposed project and are therefore not analyzed in detail in this EA.

Based on the discussion presented above and in accordance with BLM NEPA regulations and policies, the following resource area/topics will be addressed in this EA: air quality and noise;

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Table 3.1 Critical Elements of the Human Environment.<sup>1</sup>

Element	Status	Analyzed in Detail in This EA
Air quality	Potentially affected	Yes
Areas of critical environmental concern	Not present	No
Cultural resources	Potentially affected	Yes
Environmental justice related issues	Not present	No
Farmlands (prime or unique)	Not present	No
Floodplains	Not present	No
Invasive, nonnative species (noxious weeds)	Potentially affected	Yes
Native American religious concerns	Potentially affected	Yes
TEC&P species	Potentially affected	Yes
Wastes (hazardous and solid)	Potentially affected	Yes
Water quality	Potentially affected	Yes
Wetlands/riparian areas	Potentially affected	Yes
Wild and scenic rivers	Not present	No
Wilderness (wilderness study areas and wilderness areas)	Not present	No

<sup>1</sup> Adapted from the BLM NEPA Handbook H-1790-1 (BLM 1988).

cultural resources; geology and geologic hazards; health and safety (transportation); land resources and use; minerals (solid and fluid); Native American religious concerns; paleontology; rangeland and livestock grazing; recreation; socioeconomics; soil resources; TEC&P and BLM-sensitive species; vegetation (including invasive species); wastes (hazardous and solid); water resources; wetlands/riparian areas; wild horses; and wildlife.

The primary purpose of Chapter 3.0 of this EA is to provide a description of the affected area for those resource areas or topics to be addressed. Descriptions focus on those portions of the environment that would be affected by the Proposed Action and alternative.

The purpose of an EA is not only to discuss the environmental consequences of the Proposed Action and the No Action Alternative on the environmental resources or topics within the actual boundary of the proposed project area but also to discuss the cumulative impacts relative to past, present, and reasonably foreseeable future action within an identified cumulative impact analysis area (CIAA) (Council on Environmental Quality 1997). The boundaries of each CIAA were defined based on the specific resource that was evaluated and the potential for impacts beyond the CIAA. Each CIAA is described later in Chapter 3 under the specific resource being evaluated.

In addition, disturbances due to existing activities and reasonably foreseeable future actions have been quantified using data input into a computerized geographic information system. Existing disturbance has been quantified and is discussed, while disturbance due to reasonably foreseeable future actions has been quantified and is discussed in Chapter 4. Categories of existing disturbance include major industrial facilities (e.g., Jim Bridger Power Plant, Jim Bridger surface coal mine, Leucite Hills surface coal mine, Black Butte Mine); minor industrial facilities (e.g., communication sites, electric substations, ranches, small quarry sites); roads (e.g., interstate highways, state highways, county roads, unpaved roads, two-track roads); railroad tracks; oil and gas wells and associated pad, road, and pipeline facilities; and cities (e.g., Superior, Point of Rocks, Rock Springs, Green River).

Numerous projects previously authorized by the BLM and currently under review by the BLM were evaluated to determine if they would result in disturbance within any of the specific CIAAs. Future disturbance from those projects that would or could reasonably be expected to occur within the specific CIAAs were included in cumulative impact analysis. Reasonably foreseeable future actions include the Proposed Action, the remaining disturbance associated with the Continental Divide/Wamsutter II Natural Gas Project, Cooper Ridge Shallow Natural Gas Project, and the Vermillion Basin Natural Gas Exploration and Production Project. In addition, disturbances related to projects currently under review by the BLM, including the DFP, the Pacific Rim Shallow Gas Project, and the Bitter Creek Shallow Gas Project, were also evaluated in the cumulative impact analysis.

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### 3.3 AFFECTED RESOURCES

#### 3.3.1 Air Quality and Noise

##### 3.3.1.1 Air Quality

The WDEQ/AQD has been authorized to enforce national ambient air quality standards set forth in the federal *Clean Air Act*, as amended (42 U.S.C. §7401 et seq.) through Article 2 of the *Wyoming Environmental Quality Act* (W.S. 35-11-201 et seq.) and the Wyoming State Implementation Plan, which has been approved by the EPA. The Wyoming and National Ambient Air Quality Standards (WAAQS and NAAQS) set upper limits for specific air pollutant concentrations at all locations where the public has access, expressed in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The WAAQS and NAAQS are shown in Table 3.2. Wyoming Air Quality Standards and Regulations (WAQS&R) define ambient air as "that portion of the atmosphere, external to buildings, to which the general public has access" (WDEQ/LQD 2000b:8). Lands within an approved mine permit boundary are not usually accessible to the general public and are not subject to the state air quality standards; rather, they are governed by federal MSHA respirable dust standards and regulations designed to protect worker safety (Title 30 CFR Parts 70, 72, 74, and 75 et seq.).

Ambient air concentration data collected at monitoring sites in the region provide an indication of existing air quality in the region. Criteria pollutant monitoring has been performed in the region for particulate matter less than 10 microns in diameter ( $\text{PM}_{10}$ ) at sites both displaced from and predominantly upwind of the project area. Both displaced and local upwind sites are considered "background" monitoring sites for this analysis, although local upwind monitoring sites may be impacted by local industrial operations under certain meteorological conditions. By considering local upwind sites as background sites, a conservative range of  $\text{PM}_{10}$  concentrations are reported to reflect existing air quality in the region. These conservative monitoring results indicate that  $\text{PM}_{10}$  concentrations in the study area are below applicable WAAQS and NAAQS.

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Table 3.2 Selected National and Wyoming Air Quality Standards.

Air Pollutant	Averaging Time Period	Local and Regional Background Concentration ( $\text{g}/\text{m}^3$ ) <sup>1</sup>	NAAQS ( $\text{g}/\text{m}^3$ ) <sup>2</sup>	WAAQS ( $\text{g}/\text{m}^3$ ) <sup>3</sup>	Incremental Increase Above Legal Baseline	
					PSD Class I	PSD Class II
Particulate matter <10 microns in diameter (PM <sub>10</sub> )	24-hour	18-35	150	150	8	30
	AAM <sup>4</sup>	8-10	50	50	4	17
Particulate matter <2.5 microns in diameter (PM <sub>2.5</sub> )	24-hour	nd <sup>5</sup>	65	65	ns <sup>6</sup>	ns
	AAM	nd	15	15	ns	ns
Ozone	1-hour	144	235	235	ns	ns
	8-hour	139	157	na	ns	ns
Nitrogen dioxide (NO <sub>2</sub> )	AAM	4	100	100	2.5	25
Sulfur dioxide (SO <sub>2</sub> )	3-hour	132	1,300 <sup>7</sup>	1,300	25	512
	24-hour	43	365	260	5	91
	AAM	9	80	60	2	20
Carbon monoxide (CO)	1-hour	3,481	40,000	40,000	ns	ns
	8-hour	1,489	10,000	10,000	ns	ns

<sup>1</sup> Source of data: PM<sub>10</sub> - data collected at Bridger Power Plant, Site 901 from Jan. 1999 to Dec. 2000; Black Butte Mine, Site 863, from Jan. 1999 to Dec. 2000 (WDEQ/AQD 2000a); and Seedskaadee National Wildlife Refuge, 1989-2001 (personal communication, April 4, 2002, with Ken Rairigh and Bob Schick, WDEQ/AQD, Cheyenne, Wyoming). Ozone - data collected near Pinedale, Wyoming, from 1997 to 1999 (EPA 2002). NO<sub>x</sub> - Green River Visibility Study, period of record 1996-1999 (personal communication, April 4, 2002, with Ken Rairigh, WDEQ/AQD, Cheyenne, Wyoming). SO<sub>2</sub> - data collected at LaBarge Study Area, Northwest Pipeline Craven Creek Site (personal communication, April 4, 2002, with Ken Rairigh, WDEQ/AQD, Cheyenne, Wyoming). CO (BLM 1983).

<sup>2</sup> NAAQS = National Ambient Air Quality Standards (adapted from 40 CFR 50.5-50.12). Primary standard unless otherwise noted. National Primary Standards establish the level of air quality necessary to protect public health from any known or anticipated effects of a pollutant, allowing a margin of safety to protect sensitive members of the population.

<sup>3</sup> WAAQS = Wyoming Ambient Air Quality Standard (adapted from WDEQ/AQD [2000a]).

<sup>4</sup> AAM = annual arithmetic mean.

<sup>5</sup> nd = no data.

<sup>6</sup> ns = no standard.

<sup>7</sup> Secondary standard. National Secondary Standards establish the level of air quality to protect the public welfare by preventing injury to agricultural crops and livestock deterioration of materials and property and adverse impacts to the environment.

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Ambient standards for particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>) have been defined in the WAQS&R; however, these standards would not be enforced at the state level until EPA has completed an ongoing review and has determined to retain and enforce these regulations. Regional monitoring-based background values for other criteria pollutants (carbon monoxide [CO], nitrogen dioxide [NO<sub>2</sub>], ozone, and sulfur dioxide [SO<sub>2</sub>]) have been collected at monitoring sites in Sweetwater County, Wyoming, and in northwest Colorado and are well below applicable WAAQS and NAAQS. Ambient air quality data for all pollutants are summarized in Table 3.2.

There are no site-specific air quality monitors located within the TMRT area; however, numerous air quality monitors are located within the CIAA and region. Based on calculated emission, the dominant air pollutants emitted in the CIAA area are particulates (i.e., PM<sub>10</sub>), SO<sub>2</sub>, and NO<sub>x</sub>. The largest contributors to PM<sub>10</sub> emissions in the CIAA area are associated with the three industrial operations in the area, including the Jim Bridger Mine and Leucite Hills Mine and the Jim Bridger Power Plant. Local traffic on unpaved roads also contributes to total PM<sub>10</sub> concentrations, as does wind erosion of exposed surfaces. Ambient concentrations of gaseous criteria pollutants (CO, NO<sub>2</sub>, and SO<sub>2</sub>) occur primarily from mobile sources (vehicles) and from the Jim Bridger Power Plant.

Table 3.2 shows the maximum increase of PM<sub>10</sub> that is allowed by the federal *Clean Air Act* under the Prevention of Significant Deterioration (PSD) regulations and adopted in Chapter 6 of the WAQS&R. These regulations are designed to prevent significant deterioration of existing air quality in regions cleaner than the NAAQS. Under these regulations, the ambient levels of pollutants would be allowed to rise by specified increments. Prior to obtaining a permit to construct through the WDEQ/AQD, an emissions source must demonstrate that ambient concentrations from the proposed source plus selected regional sources are less than applicable Class I and Class II increments.

The CIAA for air quality resources is the same area utilized in the Continental Divide/Greater Wamsutter II CD/GWII (EIS), completed in 1998 (BLM 1999a, 1999b), and the DFP draft EIS,

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completed in April 2003 (BLM 2003a). These studies were utilized to analyze cumulative impacts at Class I and Class II areas from emissions sources in southwest Wyoming, northeast Utah, northwest Colorado and a limited portion of southeast Idaho (refer to Figure 3.1). The CD/GWII and DFP EIS analyses predicted the impacts on ambient concentrations in PSD Class I and Class II areas, the impacts of acid deposition on sensitive lakes, and the impacts to regional visibility.

Class I areas, which are allowed the smallest increment, include national parks and wilderness areas. The nearest Class I area to the CIAA is approximately 52 mi north of the project area at the Bridger Wilderness Area. All portions of Wyoming outside of Class I areas are designated as Class II areas. The CIAA is a Class II area and is not designated a nonattainment area for any pollutant by WDEQ/AQD. Class I and Class II PSD Increments are shown in Table 3.2, which indicates that all ambient concentrations (all monitored in Class II areas) are below Class II increments.

Chapter 6 of the WAQS&R requires WDEQ/AQD to review all plans for the construction of any new or modified emissions source prior to the issuance of a construction permit. In order to obtain a construction permit, an emissions source must demonstrate compliance with emissions standards, NAAQS, WAAQS, PSD Increments, and other applicable air quality regulatory requirements. If required by WDEQ/AQD, the demonstration must include air pollutant emissions from other nearby existing emissions sources to ensure that overall air quality is quantified as part of the permitting process.

#### 3.3.1.2 Noise

No site-specific noise level data are available for the proposed project area; however, noise in the area is probably in the range reported for "Grand Canyon (North Rim)" (wilderness) and "Farm in Valley" sites (Wyle Laboratories 1971). The A-weighted sound pressure level, or A-scale, is used extensively in the U.S. to measure community and transportation noise and is a measure of

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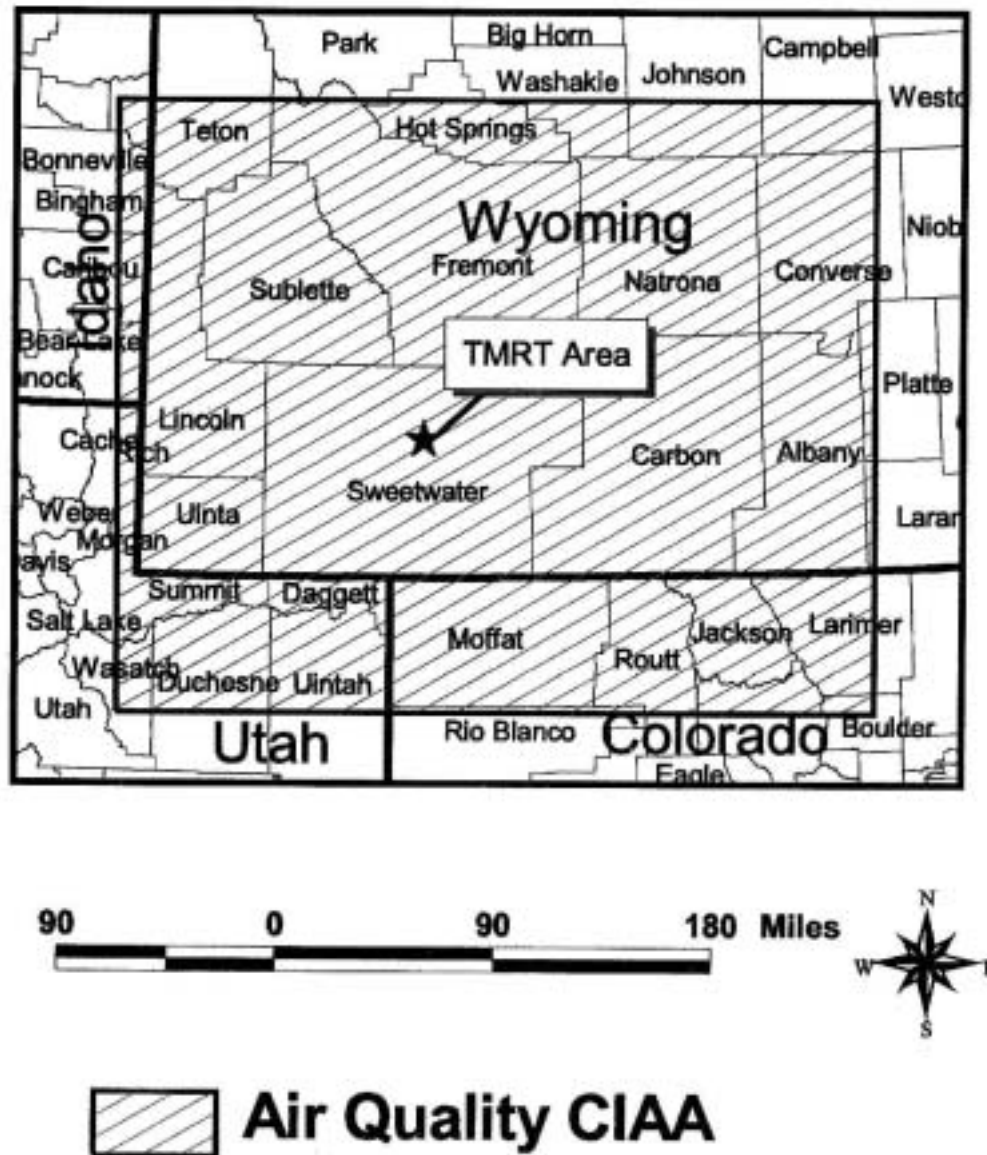


Figure 3.1 Air Quality CAA.

noise in A-weighted decibels (dBA), which is directly correlated with some commonly heard sounds. Table 3.3 presents a list of commonly heard sounds with the corresponding noise level (Rau and Wooten 1980).

Median noise levels for the proposed project area likely range from 20 to 40 dBA in the morning and evening and from 50 to 60 dBA in the afternoon when wind speeds are typically greatest. These levels correspond to noise levels of a soft whisper (30 dBA), a library (40 dBA), a quiet office (50 dBA), a small town (40-50 dBA), and normal conversation (60 dBA). Traffic along an interstate typically averages noise levels greater than 70 dBA (Wyle Laboratories 1971). Typical ambient noise levels at an operating surface quarry are in the 40- to 60-dBA range for a 24-hour period, and within 50 ft of the operation the maximum noise level may reach or exceed 85 to 95 dBA (BLM 1997b). Mining operations at the Jim Bridger Mine, livestock grazing operations, and wind are presently the primary sources of noise in the proposed project area. Major industrial noise sources within 4 mi of the TMRT area include the Jim Bridger Power Plant, Jim Bridger Mine, Leucite Hills Mine, and vehicular traffic. Noise-sensitive areas in Wyoming include private residences, occupied raptor nests, and greater sage-grouse leks during the breeding and nesting season.

Noise levels within the working mine area are governed by federal MSHA occupational noise standards and regulations designed to protect worker safety (Title 30 CFR Parts 62 et seq.).

### **3.3.2 Cultural Resources**

Cultural resources are the nonrenewable physical remains of past human activity and are protected under Section 106 of the *National Historic Preservation Act of 1966* (as amended) and the *Archaeological Resources Protection Action of 1979* (as amended). Archaeological investigations in the Great Divide Basin indicate that human activity has occurred across the landscape over the past 10,000 years, beginning during the Paleoindian period and continuing up to the present. Throughout the prehistoric past, the area was used by highly mobile hunters and gathers who exploited a wide variety of natural resources (Frison 1991).

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Table 3.3 Comparison of Measured Noise Levels with Commonly Heard Sounds, TMRT and CIAA, 2003.<sup>1</sup>

Source	dBA	Description
Normal breathing	10	Barely audible
Rustling leaves	20	
Soft whisper (at 16 ft)	30	Very quiet
Library	40	
Quiet office	50	Quiet
Normal conversation (at 3 ft)	60	
Busy traffic	70	Noisy
Noisy office with machines; factory	80	
Heavy truck traffic (at 49 ft)	90	Constant exposure endangers hearing

<sup>1</sup> Source: Rau and Wooten (1980).

A BLM Class I cultural resource inventory (i.e., file search) was conducted for the proposed TMRT area, and the file search indicates that 39 cultural resource inventories have been conducted within the proposed TMRT area. These projects include well pad/access road projects, exploratory core holes projects, and block surveys for the Jim Bridger Mine. Linear surveys include power transmission line projects, access roads, and an inventory of the Point of Rocks to South Pass Wagon Road. Approximately 2,474 acres or 42% of the TMRT area have previously been inventoried for cultural resources; however, 640 of those acres were not surveyed to current technical standards.

Twenty-five cultural resource sites have been recorded within proposed TMRT area, including 22 prehistoric sites and three historic sites. Three of the prehistoric sites have been recommended eligible for inclusion on the National Register of Historic Places (NRHP), 13 prehistoric sites are recommended not eligible for the NRHP, and the NRHP eligibility of the remaining six prehistoric sites has not been determined. One historic site, the Point of Rocks to South Pass Wagon Road, which occurs in several sections of the TMRT area, has been determined eligible for inclusion on the NRHP (refer to Figure 3.2); however, the eligibility of

the individual segments of the route within the TMRT has not been determined. The remaining two historic sites have been recommended not eligible for the NRHP.

The CIAA for cultural resources includes the TMRT area and 5-mi buffer. Numerous cultural resource inventories have been conducted within the CIAA due to the presence of the Jim Bridger Mine, a portion of the Leucite Hills Mine, and numerous linear and block projects in the general area. WDEQ/LQD required the BLM Class I and III cultural resource surveys be completed for the entire Jim Bridger and Leucite Hills mine permit areas. As a result, there may be a comparable number of prehistoric and historic sites within the unsurveyed portions of the CIAA.

### **3.3.3 Geology and Geologic Hazards**

The proposed TMRT is located on the eastern flank of the Rock Springs uplift that is an anticlinal structure that trends north/south through the center of the Greater Green River Basin. The uplift is asymmetric to the west, so its western flank is steeper than the eastern flank. The eastern flank of the uplift is marine Cretaceous and non-marine Paleocene sandstones and shales that dip eastward 5 to 10 degrees into the Great Divide Basin (Lageson and Spearing 1988; Love and Christiansen 1985). Coal that would be mined under the Proposed Action is described as the coal seam of the Fort Union Formation and has a thickness of approximately 7-11 ft and a heat content of approximately 9,000 to 9,500 BTUs per pound. Under the Proposed Action, approximately 121.5 million tons of coal would be mined over the life of the project (BCC 2003).

Surface geology within the TMRT includes four major classification units, including aeolian mixed with scattered deposits of residuum, alluvium, and slopewash; bedrock and glaciated bedrock including volcanic necks mixed with scattered shallow deposits of aeolian, grus, slopewash, colluvium residuum, and alluvium; residuum mixed with alluvium, aeolian,

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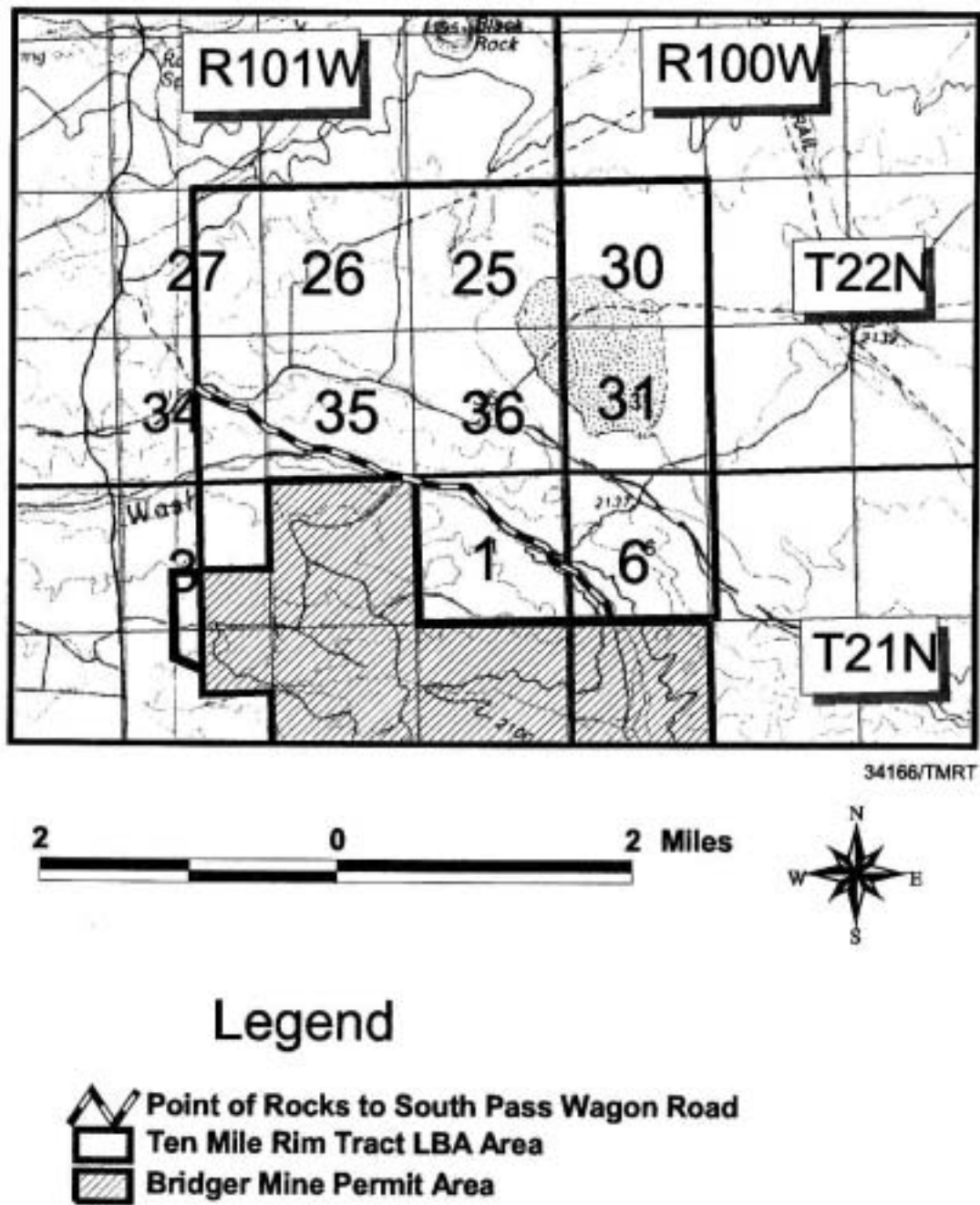


Figure 3.2 Location of the Point of Rocks to South Pass Wagon Road.

slopewash, grus, and/or bedrock outcrops; and playa deposits mixed with scattered deposits of alluvium and aeolian soils (Case et al. 1998).

The CIAA for geology and geological hazards includes the TMRT area and 4.3-mi buffer. Surface geology of the CIAA is similar to that of the TMRT and includes predominantly aeolian mixed with scattered deposits of residuum, alluvium, and slopewash and bedrock and glaciated bedrock including volcanic necks mixed with scattered shallow deposits of aeolian, grus, slopewash, colluvium residuum, and alluvium (Case et al. 1998).

The potential for seismic activity in the TMRT area is low to moderate. There have been no recorded earthquakes within the TMRT; however, there have been four recorded earthquakes within the northern portion of the CIAA over the past 20 years. Two occurred in 1975, one in 1985, and one in 1986. All of these nondamaging earthquakes ranged in magnitude between 3.3 and 3.7 on the Richter scale and would have been barely noticeable by human beings in the area (Case 2000; personal communication, March 19, 2002, with James Case, Wyoming Geological Survey). The Richter scale is a quantitative measure of the magnitude (i.e., the relative amplitude of ground motion caused by seismic waves) of an earthquake, with a lower number representing lower magnitude and a higher number representing a higher magnitude. There are no known or suspected active faults in the TMRT area or the CIAA (BLM 1996b), and there are no active or historic underground mines within the TMRT or CIAA. The nearest historic underground mines are located in Superior, approximately 8 mi southwest of the TMRT area (outside of the CIAA) (refer to Figure 1.1). Subsidence due to underground coal mining at Superior has been limited to the area immediately surrounding the mines (Case 2000; personal communication, March 19, 2002, with James Case, Wyoming Geological Survey). Therefore, there is little potential for subsidence due to the historic mining in Superior within the TMRT area or the CIAA.

There are also no other geologic hazards (e.g., landslide areas, hydrogen sulfide-producing wells, or wind-blown sand areas) known within the TMRT or the CIAA (BLM 1996b). There are also

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no known Special Flood Management Areas designated by Federal Emergency Management Agency (FEMA) within the TMRT or CIAA.

#### **3.3.4 Health and Safety (Transportation)**

The primary health and safety risks for people living, working, and traveling in the general proposed project area are related to vehicle traffic. Surface transportation into and out of the TMRT area would be provided by a network of primary and secondary roads (refer to Figure 1.1). Specifically, primary public access to the TMRT is provided on Interstate 80 from the east and west to Point of Rocks and Wyoming State Highway 377 and County Road 15 to the Jim Bridger Mine where the public road terminates and the private road starts. From the Jim Bridger Mine entrance, traffic is controlled and restricted by BCC, and only authorized personnel are allowed to enter the mine permit area. However, the Jim Bridger Mine cannot legally and does not restrict access to inactive portions of the mine property where livestock grazing occurs. Workers accessing the underground working within the TMRT area would travel on improved roads and haul roads to Ramp 14 where the only access to the underground mine would be located.

According to 2000 data from the Wyoming Department of Transportation (2001), average daily traffic for Interstate 80 between Point of Rocks exit and the Superior exit was recorded at 12,500 over a 24-hour period, and, of that total, 6,800 were recorded as all types of trucks (e.g., pickups, semis, flatbeds, stock trucks, etc.). For Wyoming State Highway 377 north of Point of Rocks, the average daily traffic was recorded at 1,200 vehicles over a 24-hour period, and, of the total, 180 vehicles were recorded as all types of trucks (e.g., pickups, semis, flatbeds, stock trucks, etc.).

#### **3.3.5 Land Resources and Use**

The surface ownership pattern within and adjacent to the TMRT is checkerboard, typically where even-numbered sections are owned by the federal government, odd-numbered sections are

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privately owned, and select even-numbered sections are owned by the State of Wyoming. Major land uses in the TMRT area include livestock grazing, wildlife habitat, and recreation. In addition, some activities associated with the adjacent Jim Bridger Mine are also located within the TMRT area. These activities include coal exploration activity, vegetation study exclosures, access roads, and a distribution powerline. BCC has obtained ROWs and/or special use permits for all mine-related activities located on BLM-administered land that are located off of the federal lease area. No other ROWs or special use permits are known to have been issued within the TMRT by BLM (BCC 2003). In addition, there are no ROWs exclusion areas within the TMRT area (BLM 1996b).

The TMRT includes 5,916 acres, of which 2,242 acres of coal reserves (38%) are owned by the federal government and administered by the BLM, 640 acres of coal reserves (11%) are owned by the State of Wyoming and administered by the WOSLI, and 3,034 acres of coal reserves (51%) are privately owned (refer to Figure 3.2). A detailed description of mineral and surface ownership for the TMRT is presented in Table 2.1.

The CIAA for land resources and use is defined as the TMRT area and a 4.3-mi buffer area around the TMRT area and includes a total of approximately 78,200 acres. Within the CIAA there is a total of 6,308 acres of existing disturbance. Major industrial facilities account for 4,661 acres of disturbance, roads count for 385 acres of disturbance, and minor industrial facilities account for 1,262 acres of disturbance.

### **3.3.6 Minerals (Solid and Fluid)**

#### **3.3.6.1 Leasable Solid Minerals (Coal)**

Coal reserves in the TMRT are contained in the Fort Union Formation, and there are an estimated 121.5 million tons of in-place underground-minable low-sulfur subbituminous coal within the D-41 seam of the TMRT. The D-41 seam ranges from 7 to 11 ft in thickness. There are other coal seams within the TMRT area, including Deadman #5 and #6 beds; however, these beds are much thinner, ranging from 2 to 5 ft in thickness, and would not be mined under the Proposed Action.

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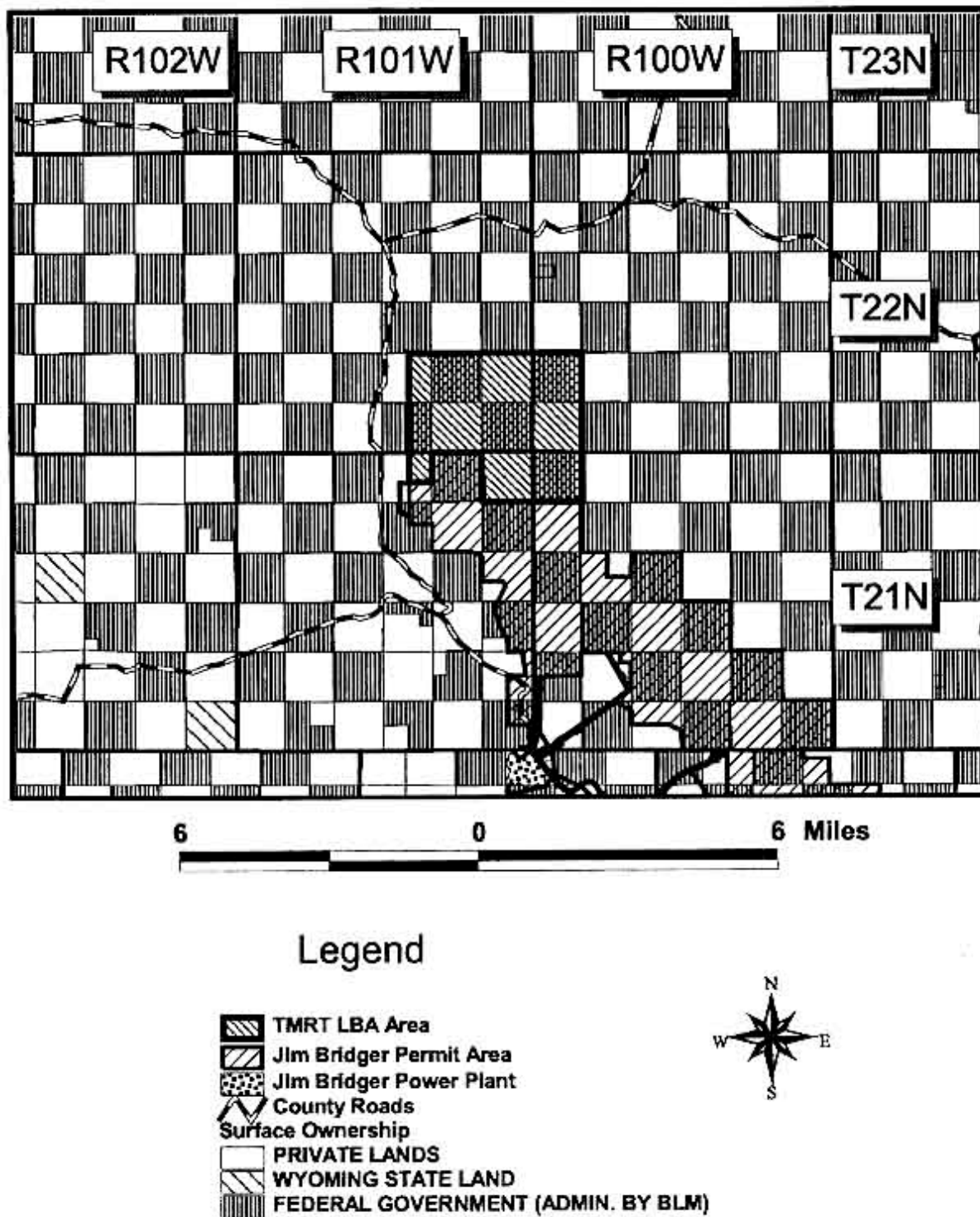


Figure 3.3 Surface Landownership in the TMRT Area and Vicinity.

The CIAA for mineral resources includes the TMRT area and a 4.3-mi buffer area. Within the CIAA, coal continues to be surface-mined at the Jim Bridger Mine, which mines coal from all of the seams discussed above. The Jim Bridger Mine removed approximately 5.8 million tons of coal in 2002 from the entire mine area (i.e., not just from the CIAA).

#### 3.3.6.2 Leasable Fluid Minerals (Oil, Gas, and Coalbed Methane)

There is a moderate potential for oil and gas development within the TMRT area; however, historically, there has been little interest in conventional oil and gas exploration in the TMRTA (refer to Figure 3.4) (Anderson et al. 1990; BLM 2003b; PacifiCorp 2003). While there are numerous federal oil and gas leases within the TMRT area, there are no producing wells. There are three plugged and permanently abandoned drill holes within the TMRT area, indicating that the tract has been explored for potential oil and gas reserves (Wyoming Oil and Gas Conservation Commission [WOGCC] 2003).

The CIAA also has a moderate potential for oil and gas development (Anderson et al. 1990) (refer to Figure 3.4). WOGCC well records for the CIAA encompassing the TMRT area indicates that only 17 wells have been drilled, that none of these wells have reported any production, and that there are currently no producing wells within the CIAA (refer to Figure 3.4) (BLM 2003b; WOGCC 2003). The nearest producing well is located approximately 10 mi southeast of the TMRT, outside of the CIAA.

BLM reports indicate that there is a high potential for tertiary and upper cretaceous coalbed methane within coal seams found in both the TMRT area and the CIAA; however, there are no producing wells in either of these areas (BLM 1996b, 2003b). During coal exploration drilling, BCC tested four of its exploration drill holes for the presence of coalbed methane. These wells were 1,000+ ft deep and were drilled into the Deadman coal zone of the Fort Union Formation (the same coal zone that would be mined under the Proposed Action). Results indicate that there was no evidence of economic reserves of coalbed methane in any of these drill holes and the samples were essentially devoid of methane in the coal (BLM 2003b; PacifiCorp 2003). In

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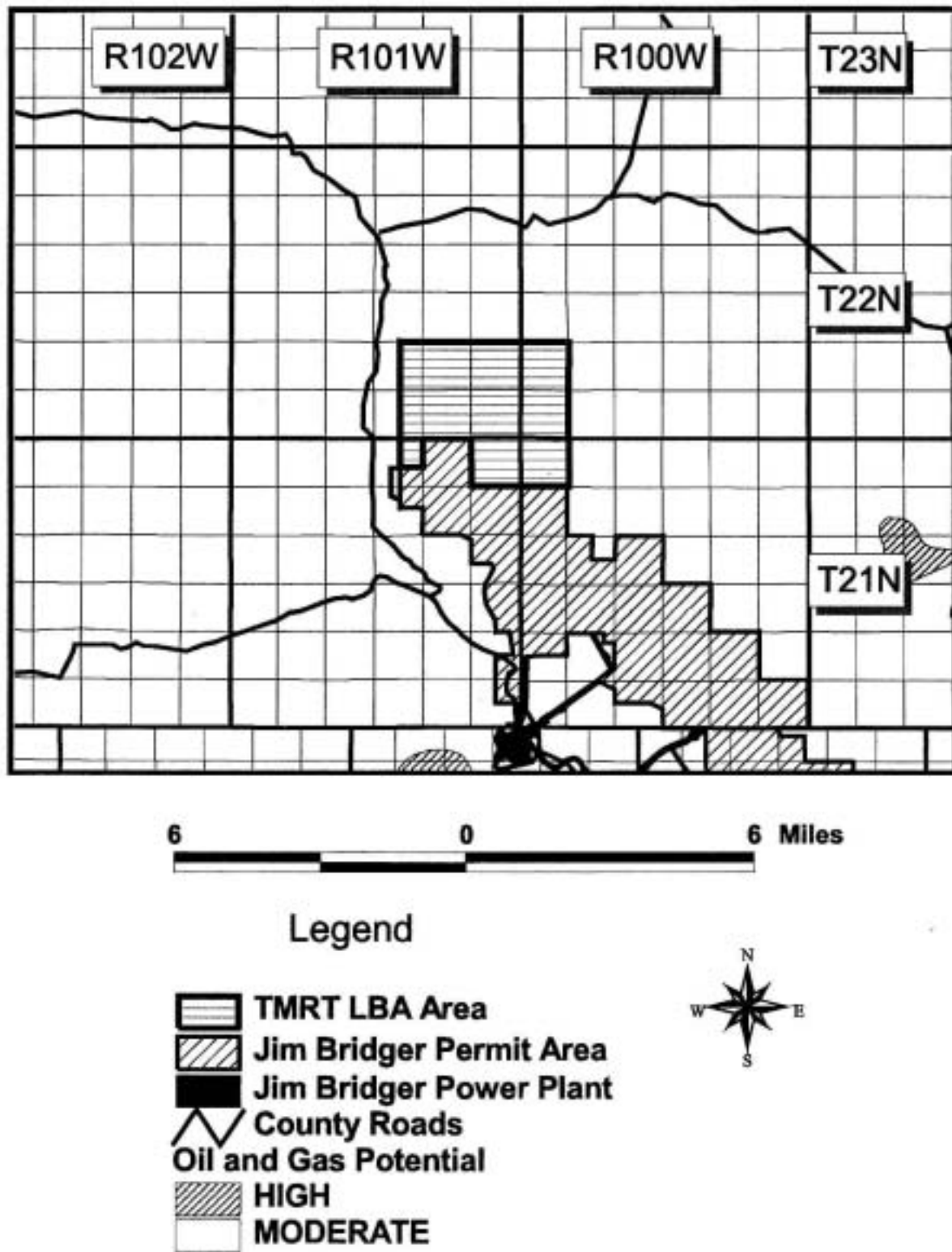


Figure 3.4 Oil and Gas Potential Within the TMRT and Vicinity.

addition, as of January 29, 2003, the WOGCC had not issued any Applications for a Permit to Drill coalbed methane wells within the TMRT or the CIAA (BLM 2003b; PacifiCorp 2003). Based on results of coal samples collected from the TMRT area, coalbed methane content is insufficient to support economic gas development in the Deadman coal zone (BLM 2003b). The nearest coalbed methane project is located approximately 11 mi northwest of the TMRT but has only produced small amounts of gas, has been temporarily shut-in, and is not producing any gas (BLM 2003b).

#### 3.3.6.3 Locatable Minerals

There are no active locatable mineral (e.g., precious metals, bentonite, etc.) mines or economically recoverable deposits of locatable minerals known within the TMRT or the CIAA, and there are no leases or claims for locatable minerals within the TMRT or CIAA (BLM 1996b).

#### 3.3.6.4 Salable Minerals

There are no active construction aggregate quarries within the TMRT or the CIAA; however, the BLM has identified several sand and gravel deposits along the western boundary of the CIAA (BLM 1996b).

### **3.3.7 Native American Religious Concerns**

In accordance with the *American Indian Religious Freedom Act* and BLM Manual 8160-1 Handbook (BLM 1979a), numerous Native American groups including but not limited to Crow, Shoshone, Comanche, Arapaho, Cheyenne, and Sioux have utilized the proposed project area (BLM 1996b). Native American tribes were consulted during the scoping period for this EA. Tribes and/or individuals were sent certified letters requesting their comments concerning any religious or cultural areas within or near the TMRT area. The CIAA for Native American

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religious concerns in the TMRT area and a 5-mi buffer area. To date, no sites or areas of traditional cultural interest have been identified within the TMRT or the CIAA.

### **3.3.8 Paleontological Resources**

Paleontological resources in the Great Divide Basin span the time from the late Cretaceous to early Tertiary, and include remains of dinosaurs, mammals, turtles, crocodiles, other reptiles, fish, snails, and plants. Geologic units within the project area include the Fort Union Formation, which contains the target coal seam, and the overlying Wasatch Formation. The Fort Union Formation is Paleocene in age, approximately 64 to 55 million years old. The Wasatch Formation in the general area is subdivided into several layers, and the area around the project area is classed as the Main Body, which represents deposits from 55 to approximately 50 million years ago. These Formations are primarily terrestrial in origin, and were laid down in low-lying areas of open woodlands and streams. Fossils known from these two Formations are similar in type, including small mammals, turtles, crocodiles, snails, petrified wood, and leaves. BLM has determined that all vertebrate fossils, which include bones, teeth, turtle shells, and tracks, are scientifically significant. In rare cases, fossil plant remains, petrified wood, and invertebrate fossils can also be designated as significant, but that does not apply in the project area.

There are 8 recorded fossil localities within a few miles of the project area, but none are believed to be within the boundaries of the TMRT area. However, because of the high potential, it is probable that fossils do occur within the project area but have not been recorded. Finding fossils depends on being able to see bare exposures of the bedrock, or nearly so. Soil development or vegetation can obscure fossils, and may prevent locating them in all instances. Surveys performed in advance of surface-disturbing activities may identify previously unknown fossil occurrences, but fossils could still be found during construction activities as they are uncovered by ground disturbing activities. Most of the significant fossils are small, and difficult to see.

Much of the information important to scientific research includes the surrounding rock, called matrix, that contains fossils. This matrix helps to explain the environment that the animal or

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plant lived in when alive, the mode of deposition, the age of the fossils, and correlations with other areas. Therefore, it is important to know exactly where the fossil came from, and in some cases, the exact position of each fossil and relationship to nearby fossils.

### **3.3.9 Rangeland and Livestock Grazing**

The TMRT is located within the Rock Springs grazing allotment. Grazing privileges (including federal and state grazing allotments) within the proposed project area are permitted to private individuals. Stocking rates for livestock within the proposed project area are approximately 12.5 acres per animal unit month (AUM) (personal communication, October 15, 2003, with Kevin Lloyd, Range/Horse Specialist, BLM, Rock Springs Field Office, Wyoming). Therefore, the entire TMRT area would potentially contain approximately 473 AUMs.

The CIAA for livestock grazing is the entire Rock Springs grazing allotment which encompasses 2,135,539 acres (refer to Figure 3.5). Approximately 2.0% of the CIAA (43,363 acres) is currently disturbed by roads, major industrial facilities, cities, minor industrial facilities, and wells and associated facilities. Approximately 92% of the allotment is utilized from December 1 to May 15 by cattle and sheep, while the remaining 8% of the allotment is permitted for spring and fall grazing. Of the 180,000 AUMs available within the Rock Springs grazing allotment, usage is approximately 90,000 AUMs (50% of the available AUMs) (personal communication, October 15, 2003, with Kevin Lloyd, Range/Horse Specialist, BLM, Rock Springs Field Office, Wyoming).

### **3.3.10 Recreation**

Lands within the TMRT offer some big game hunting opportunities for antelope, mule deer, elk, and greater sage-grouse. Secondary recreational activities within the TMRT include camping, off-road use, rock hunting, and hiking. However, given the checkerboard landownership pattern, the controlled nature of the TMRT property, the remoteness of the TMRT, and the availability of other more potentially appealing areas in the general area, these secondary recreational

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opportunities appear to receive limited use in the TMRT. There are no developed recreation areas within the TMRT.

The Continental Divide National Scenic Trail (CDNST) was established by Congress in 1978 and covers approximately 3,100 mi from Canada to Mexico, with approximately 600 mi located within Wyoming. In accordance with the 1985 U.S. Forest Service Comprehensive Management Plan, the on-the-ground route of the CDNST attempts to stay within 50 mi either side of the Continental Divide. In establishing officially designated segments of the CDNST, the BLM attempted to locate the trail on existing primitive two-track roads or, as necessary, improved roads (i.e., paved roads) and to minimize on-the-ground segments that are located on privately owned land. The BLM has entered into cooperative agreements with private landowners to provide the public with legal access to those trail segments that are located on private land.

As illustrated on Figure 3.6, the Continental Divide separates approximately 30 mi north of the TMRT area near a geographic feature called Oregon Buttes. The northern branch of the Continental Divide heads east from Oregon Buttes, crosses U.S. Highway 287 toward the Ferris Mountains, turns south, and continues past Rawlins, Wyoming. The southern branch of the Continental Divide heads south from Oregon Buttes, turns east near Superior, Wyoming, crosses through the TMRT LBA area, and then proceeds east-southeast to a point south of Rawlins Wyoming, where the two branches merge back into a single geographic feature. The area located between the two branches of the Continental Divide is designated as the Great Divide hydrologic basin (Knight 1994). This is a 3,865-mi<sup>2</sup> area where water does not flow to either the Atlantic Ocean or the Pacific Oceans (i.e., surface water will not flow out of this area) and is the largest internally controlled drainage basin along the Continental Divide within the US.

The only BLM-designated segments of the CDNST in Wyoming are located along the northern branch of the Continental Divide in central Wyoming. In June 2000, the BLM Lander, Rock Springs, and Rawlins Field Offices completed the official designation and signing of the 165-mi segment between Wyoming State Highway 28 near South Pass City, Wyoming, and the Medicine

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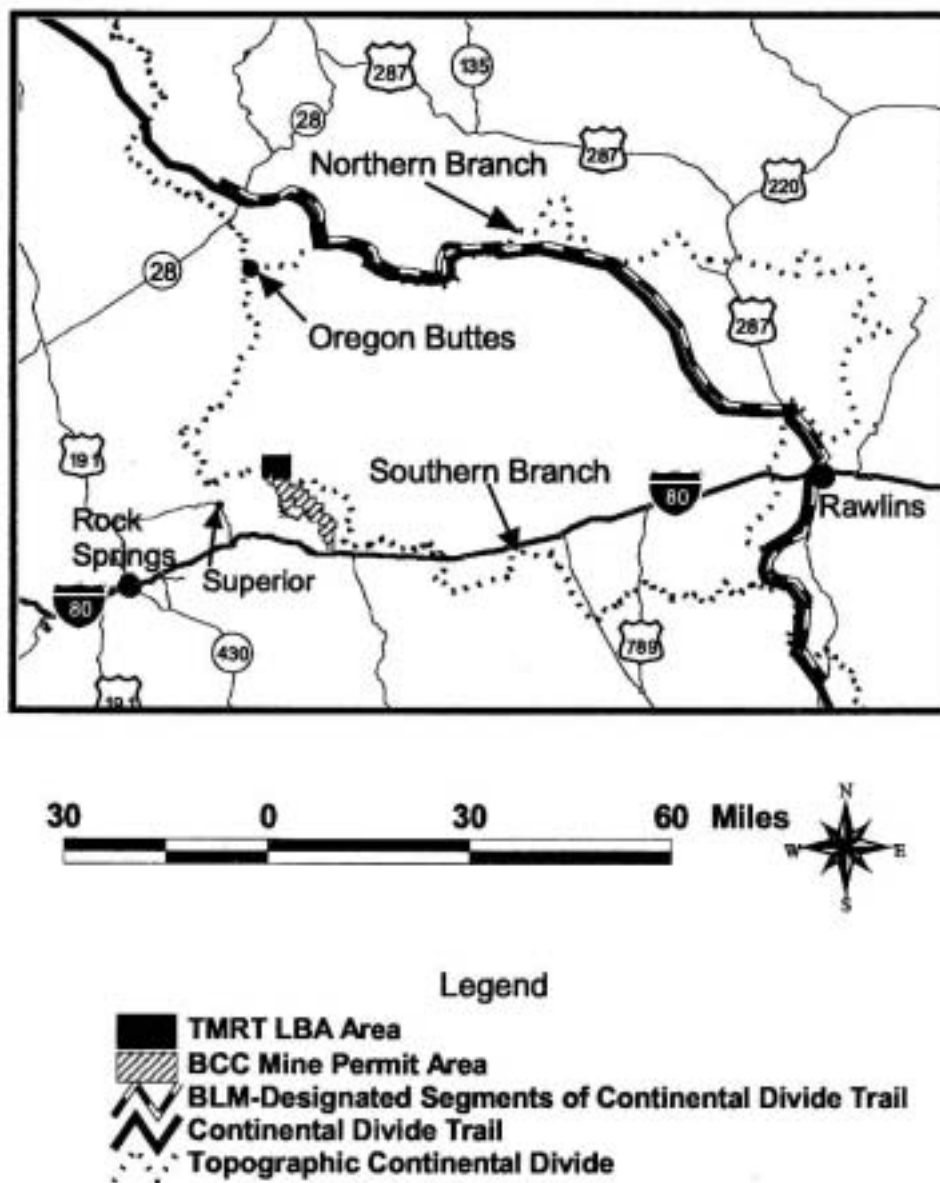


Figure 3.6 Location of the CDNST.

Bow/Routt National Forest south of Rawlins, Wyoming (refer to Figure 3.6). The CDNST segment generally follows the Continental Divide but deviates along a 40-mi segment north of Rawlins, Wyoming. This trail segment crosses land owned by private individuals, the State of Wyoming, and the federal government (administered by the BLM).

At this time, there are no BLM officially designated segments of the CDNST along the southern branch of the Continental Divide. However, there is a possibility of the future establishment of an official trail along the southern branch of the Continental Divide (personal communication, November 12, 2003, with Jo Foster, BLM-recreation planner, Rock Springs, Wyoming). Any new route or on-the-ground segment of the CDNST that would follow the southern branch of the Continental Divide within the TMRT LBA area would only be approximately 0.5 to 1.0 mi away from the proposed location of the surface support facilities for underground mining operation and the active highwall mining area of the existing surface coal mining operations at the Jim Bridger Mine.

### **3.3.11 Socioeconomics**

For the purpose of this section, the CIAA is assumed to include all of Sweetwater County.

The TMRT is located in Sweetwater County. Based on the 2000 census, Sweetwater County's population is estimated at 37,613, a 3.1% decrease in population from 1990 (U.S. Department of Commerce [USDOC] 2000). Total full-time and part-time employment in Sweetwater County was 25,246 in 1998, which was composed of 25,043 nonfarm workers and 203 farm workers. In 1998, mining accounted for 3,966 jobs, with approximately 4,636 workers employed in retail trade, 4,203 workers employed by government and government enterprises, and 12,238 workers employed in the service industry (USDOC 2000).

Annual per capita personal income in Sweetwater County was \$16,810 in 1990 compared to \$25,345 in 1998--a 50.8% increase (USDOC 2000). The adjusted annual average unemployment rate in Sweetwater County in 2002 was 4.7% (Wyoming Department of Employment 2003). The

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cost of living index for Sweetwater County was 97 during the second quarter of 2002, compared to a statewide average for Wyoming of 100 (Wyoming Division of Economic Analysis 2003). According to the 1990 census, the percent of all persons living below the poverty level in Sweetwater County was 8.5%. There were 1,816 vacant housing units or a rate of 11.4% in Sweetwater County in 2000, compared to the statewide average vacant housing rate of 13.5% (USDOC 2000). In 1999, the average annual wage for coal miners in Wyoming (not including benefits) was approximately \$58,100 (Borden et al. 1994).

Rock Springs is the closest city to the project area. Most of the workforce would reside in Rock Springs or Green River, thereby benefiting the local economy and Sweetwater County.

As discussed earlier in this EA, coal mined at the Jim Bridger Mine is utilized to generate electricity at the nearby Jim Bridger Power Plant. The power plant is capable of generating 1,120 megawatts (MW) of electricity and is the largest coal-fired power plant in PacifiCorp's or Idaho Power's system. In addition, the Jim Bridger Power Plant is connected to the western power grid through a series of transmission lines. The western power grid provides electricity to 13 western states, the provinces of British Columbia and Alberta, and a portion of northern Mexico.

The coal mined at the Jim Bridger Mine includes minimal transportation costs because the mine is less than 10 mi away from the power plant. Once mined, the coal is hauled directly to the power plant by truck or via an overland conveyor system. This type of mine-mouth operation helps minimize the cost of electricity for commercial and residential customers. Coal purchased by the power plant from other suppliers would have to be transported to the power plant by rail and would include increased transportation costs that are not currently incurred for coal that is produced at the Jim Bridger Mine.

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### **3.3.12 Soil Resources**

The Natural Resources Conservation Service (NRCS) has not published a detailed soil survey report for the TMRT. However, the College of Agriculture at the University of Wyoming has prepared digital soil maps (at 1:100,000 scale) for southwest Wyoming including the TMRT area and CIAA (Munn and Arneson 1998). The CIAA includes the TMRT area and a 4.3-mi buffer. The TMRT is primarily composed of typical Torriothents, loamy mixed, mixed (calcareous), frigid, shallow-Typic Haplocalcids (76%, soil map unit SW09). The remainder of the TMRT is composed of 15% dune land - Typic Torripsamments, mixed, frigid - Typical Torriorthents, coarse-loamy, mixed (calcareous), shallow (soil map unit SW02) and 9% Typic Haplosalids, fine, mixed, frigid and Typic Haplocambids, fine-silty, mixed, frigid (soil map unit SW08) (refer to Figure 3.7). The soils in the areas of support facilities (e.g., conveyor and powerline) are primarily composed of typical Torriothents, loamy mixed, mixed (calcareous), frigid, shallow-Typic Haplocalcids (SW09) and Ustic Torriorthents, coarse-loamy, mixed, frigid, and Typic Torrifluents, loamy-skeletal, frigid (SW12). In addition to the soil types described above, the CIAA also includes Typic Torrifluents, fine-silty and fine, mixed (calcareous), frigid (SW01); Ustic Haplargids, fine-loamy, mixed, frigid-Ustic Haplocambids, fine-loamy, mixed, frigid, and Typic Natrargids, fine-loamy, mixed frigid (SW11); and Ustic Torriorthents, coarse-loamy, mixed, frigid, and Typic Torrifluents, loamy-skeletal, frigid (SW12). Soil information presented in this section does not include areas that have been disturbed or developed by industrial or mine-related activities.

### **3.3.13 TEC&P and BLM-sensitive Species**

#### **3.3.13.1 Introduction**

The federal *Endangered Species Act* (16 U.S.C. 1531-1543) protects listed threatened and endangered plant and animal species and their critical habitats. A list of federally listed threatened, endangered, candidate, and proposed (TEC&P) species that potentially occur in the vicinity of the proposed project was compiled from information provided by the Wyoming State

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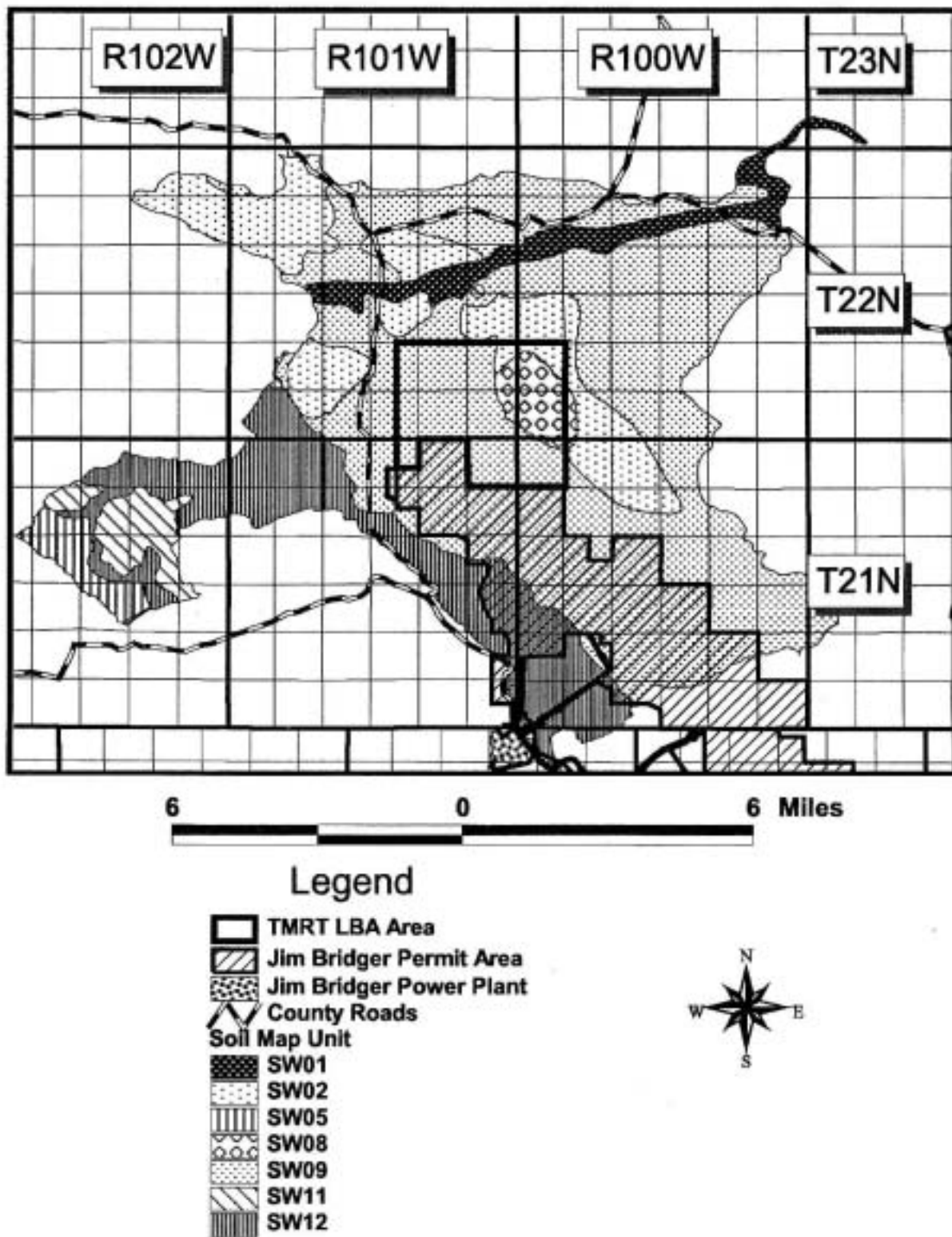


Figure 3.7 Soil Map Units Within the TMRT and CIAA.

Office of the USFWS (2001) and the Wyoming Natural Diversity Database (WNDD) (2003) and is presented in Table 3.4.

TEC&P species are those that have been specifically designated as such by the USFWS. Endangered species are those that are in danger of extinction throughout all or a significant portion of their range. Threatened species are those that are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. Proposed species are those for which the USFWS has published proposed rules in the *Federal Register* for listing of the species but for which a final rule has not been adopted. Candidate species are those for which the USFWS has sufficient data to list as threatened or endangered but for which proposed rules have not yet been issued. BLM-sensitive species are those that may warrant future designation as candidate species but available data are not sufficient for USFWS to make such a designation decision; however, these species have been designated as a BLM-sensitive species by the BLM.

#### 3.3.13.2 Federally Listed Animal and Plant Species

Federal threatened and endangered animal species that may occur in the vicinity of the TMRT include black-footed ferret and bald eagle (Table 3.4). The yellow-billed cuckoo is a candidate for listing. The threatened Ute ladies'-tresses is the only federally listed plant species with the potential to occur within or in the vicinity of the TMRT. Several species of endangered fish (bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) are found in the lower reaches of the Upper Colorado River drainage basin and are affected by water depletions.

The USFWS is currently evaluating petitions for the possible listing of the pygmy rabbit and greater sage-grouse under the federal *Endangered Species Act*. In addition, the decision by the USFWS in 2003 to not list the mountain plover is currently under review. However, at this time, these species are not protected under the federal *Endangered Species Act*.

Black-footed Ferret. The black-footed ferret, a federally endangered species, was once distributed throughout the high plains of the Rocky Mountain and western Great Plains regions

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Table 3.4 Federal Threatened, Endangered, Proposed, and Candidate Species and Their Potential Occurrence Within the Proposed Project Area, 2003.

Common Name	Scientific Name	Federal Status <sup>1</sup>	Potential Occurrence Within the Proposed Project Area <sup>2</sup>
<b>Mammals</b>			
Black-footed ferret	<i>Mustela nigripes</i>	E	X
<b>Birds</b>			
Bald eagle <sup>3</sup>	<i>Haliaeetus leucocephalus</i>	T	O
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C	R
<b>Plants</b>			
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	T	X
<b>Fish</b>			
Bonytail	<i>Gila elegans</i>	E	CO
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E	CO
Humpback chub	<i>Gila cypha</i>	E	CO
Razorback sucker	<i>Xyrauchen texanus</i>	E	CO

The Colorado pikeminnow, razorback sucker, humpback chub, and bonytail are endangered fish species found in the upper Colorado River and could be adversely impacted by the withdrawal of groundwater associated with the Proposed Action. Formal consultation with the USFWS will determine if any impacts would occur and an appropriate discussion will be included in the final EA.

<sup>1</sup> Federal status:

E = listed as federally endangered.

T = listed as federally threatened.

C = candidate for listing.

<sup>2</sup> Species occurrence:

O = occasional; this species may occur in the project area during specific times of the year and may be locally common when suitable food is available; generally not present for extended periods.

R = rare; species may be in the project area for just a few days or hours (e.g., stopping over during migration), or the species has only occasionally or rarely been sighted in the project area. Encounters during the proposed action are very unlikely.

X = unlikely; there has been no recent historical record of the species' occurrence in the project area; probability of encountering the species during the Proposed Action is very unlikely.

CO = Colorado River species. This species would not occur within the project area but it could be affected by the Proposed Action.

<sup>3</sup> Proposed for removal from federal listing.

(Clark and Stromberg 1987; Forrest et al. 1985). Prairie dogs are the main food of black-footed ferrets (Sheets et al. 1972), although a few black-footed ferrets have been historically collected away from prairie dog towns (Forrest et al. 1985). The last known wild population of black-footed ferrets was discovered in the Pitchfork area near Meeteetse in northwest Wyoming, in 1981. Due to the fear that canine distemper would wipe out this population, all remaining black-footed ferrets were captured from the Pitchfork area and placed into a captive breeding project in 1985 (WGFD 1997). The captive breeding program is designed with the objective of reintroducing the species into suitable habitats in the wild. The nearest black-footed ferret

reintroduction area is located approximately 65 mi south of the TMRT in the Little Snake Black-footed Ferret Management Area, Moffat County, Colorado.

The *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (USFWS 1989) defines potential black-footed ferret habitat as any white-tailed prairie dog towns or complexes greater than 200 acres in size with a burrow density of greater than 20 burrows per hectare (8 burrows per acre). Prairie dogs are known to occur within the TMRT; however, prairie dog towns have not been delineated nor densities calculated. Therefore, potential black-footed ferret habitat may occur within the TMRT. No recent black-footed ferret observations have been recorded in the vicinity of the TMRT (WNDD 2003).

In a consultation letter to the USFWS, the BLM has made a “no effect” determination for this species or their habitat as a result of the Proposed Action (USFWS 2004) (refer to Appendix C).

Bald Eagle. The bald eagle is a federal threatened species (down-listed from endangered and now proposed for removal from federal listing) that requires cliffs, large trees, or sheltered canyons associated with concentrated food sources (e.g., fisheries or waterfowl concentration areas) for nesting and/or roosting areas (Edwards 1969; Snow 1973; Call 1978; Steenhof 1978; Peterson 1986). Bald eagles forage over wide areas during the nonnesting season (i.e., fall and winter) and scavenge on animal carcasses such as pronghorn, deer, and elk.

No bald eagle nests or winter roosts are known to occur in the TMRT; the lack of suitable nesting or winter roosting habitats within the TMRT likely precludes its use for such activities by bald eagles. The Green River, Flaming Gorge Reservoir, Big Sandy Reservoir, and Seedskadee National Wildlife Refuge provide the nearest favorable nesting, roosting, and foraging habitat for bald eagles. The nearest of these areas is the Green River, approximately 40 mi west of the TMRT. Searches of the WNDD revealed no records of bald eagles in the vicinity of the TMRT, including the Jim Bridger Reservoir (WNDD 2003); however, it is likely that individual bald eagles occasionally forage in or fly through the area.

In a consultation letter to the USFWS, the BLM has made a “no effect” determination for this species or their habitat as a result of the Proposed Action (USFWS 2004) (refer to Appendix C).

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Yellow-billed cuckoo. The yellow-billed cuckoo is a federal candidate and BLM-sensitive species. In Wyoming, the yellow-billed cuckoo is a rare summer breeder that arrives from wintering grounds in South America late May and departs September to October. The yellow-billed cuckoo is primarily found in open streamside deciduous woodland with low, scrubby vegetation under growth bordering the Bighorn, Powder, North Platte, Henry's Fork, and Black's Fork Rivers. Cottonwood stands and willow thickets are preferred for nesting and foraging (WNDD 2003). The yellow-billed cuckoo has been identified as potentially occurring in the riparian areas west of the Continental Divide; however, it is highly unlikely that the yellow-billed cuckoo occurs in the TMRT, since no riparian habitat is present and no observations have been recorded in the vicinity (WNDD 2003). The nearest potential yellow-billed cuckoo habitat is likely located along the Green River located approximately 40 mi to the west of the TMRT. The likelihood of yellow-billed cuckoo presence in the project area is extremely low; therefore, the yellow-billed cuckoo is not expected to be impacted by the Proposed Action and is not discussed further in this EA.

In a consultation letter to the USFWS, the BLM has made a “no effect” determination for this species or their habitat as a result of the Proposed Action (USFWS 2004) (refer to Appendix C).

Ute ladies'-tresses. Ute ladies'-tresses, a federal threatened species, is a perennial plant and a member of the orchid family that inhabits moist streambanks, wet meadows, and abandoned stream channels at elevations of 4,500-6,800 ft (Fertig 1994; Spackman et al. 1997). Where it occurs in ephemeral drainages, groundwater is typically shallow (i.e., within approximately 18 inches of the ground surface) (personal communication, March 16, 2000, with Pat Deibert, USFWS; personal communication, March 22, 2000, with Walt Fertig, WNDD). No suitable Ute ladies'-tresses habitat occurs within the TMRT, and no known occurrences have been recorded in the vicinity of the TMRT (WNDD 2003). The likelihood of Ute ladies'-tresses being present in the project area is extremely low; therefore, the Ute ladies'-tresses is not expected to be impacted by the Proposed Action and is not discussed further in this EA.

In a consultation letter to the USFWS, the BLM has made a “no effect” determination for this species or their habitat as a result of the Proposed Action (USFWS 2004) (refer to Appendix C).

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Colorado River Water Depletion. The Recovery and Implementation Program for Endangered Species in the Upper Colorado River Basin was initiated in January 1988 as a reasonable and prudent approach for projects to avoid jeopardizing the continued existence of endangered fish (i.e., bonytail, Colorado pikeminnow, humpback chub, and razorback sucker) within the Upper Colorado River. Under the aforementioned program, any depletions of water from tributaries within the Colorado River drainage system (including a portion of the TMRT area) are considered by the USFWS as jeopardizing the continued existence of these species. Depletions can be the result of the withdrawal or removal of surface water resources. Depletions can also result from impacts on an outcropping aquifer either by effecting existing surface expressions of groundwater (i.e., seeps or springs) or effects on the recharge of an aquifer by surface water resources.

Under the Proposed Action, no surface water from the TMRT area would be directly removed or depleted from the Upper Colorado River Basin. Sedimentation from surface water runoff from all areas disturbed associated with the Proposed Action would be controlled by the implementation of alternate sediment control measures required by WDEQ/LQD and described in the mine plan portion of the Proposed Action. Alternative sediment control measures remove sediment without interfering or preventing the water from reaching its natural ephemeral receiving streams. Therefore, based on the implementation of the alternative sediment control measures, there would be no temporary or permanent impact or depletion of any surface water resources, including those that provide water into the upper Colorado River drainage.

Under the Proposed Action, underground mining operations would remove water from the Deadman coal zone, the Lance Formation, and the Fort Union Formation overburden. However, there are no surface expressions of groundwater from these aquifers in the immediate area that contribute water to the Colorado River drainage. In addition, there are no recharge areas for these aquifers that would affect any tributary of the Colorado River drainage system.

Under the Proposed Action, the 3,000-ft deep Bridger No.1 production water well would remove water from the Ericson Formation for dust suppression, equipment washdown, and emergency

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fire suppression. In this area, the Ericson Formation generally dips from southwest to northeast and under lays the TMRT project area. The top of the Ericson Formation is approximately 2,400 ft below the surface within the TMRT project area and outcrops near Point of Rocks approximately 9 mi south of the TRMT project area. There are no known seeps or springs associated with the Ericson Formation near the project area that contribute surface water to the Colorado River (via Bitter Creek and the Green River).

Bitter Creek (a tributary of Colorado River) is in contact with a portion of the outcropping Ericson Formation (via the Bitter Creek alluvium) near Point of Rocks. However, drawdown analysis for this project determined that the maximum drawdown from the operation of the Bridger No.1 well would extend approximately 5-6 miles from the location of the well. The areal limit of this maximum potential drawdown would still be approximately 3-4 miles north of the Ericson Formation outcrop at Point of Rocks. As a result, there would be no impacts on the practical recharge rate for the Ericson Formation at this location and there would be no drawdown in the Bitter Creek alluvium or Bitter Creek surface water. Therefore, there would be no hydrologic connection between the effected portion of the Ericson Formation and the Bitter Creek alluvial and surface water systems and there would be no depletion of surface water from Bitter Creek or the Colorado River drainage system (personal communication, April 16, 2004, with George Hoffman, professional engineer and hydrologist, Hydro-Engineering LLC, Casper, Wyoming). Consequently, the Proposed Action would have no adverse affect on endangered fish species in the Upper Colorado River Basin.

Water production associated with the Proposed Action would not result in any depletions from the Colorado River and water depletions from the Colorado River are not discussed further in this EA.

In a consultation letter to the USFWS, the BLM has made a “no effect” determination for this species or their habitat as a result of the Proposed Action (USFWS 2004) (refer to Appendix C).

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### 3.3.13.3 BLM-sensitive Animal and Plant Species

Based on habitat preference and geographic location, numerous BLM-sensitive species are known to occur or potentially to occur within the TMRT. Table 3.5 presents a list of BLM-sensitive species identified by the BLM Rock Springs Field Office. BLM-sensitive animal or plant species observed in or in the vicinity of the TMRT include white-tailed prairie dog, pygmy rabbit, white-faced ibis, ferruginous hawk, greater sage-grouse, long-billed curlew, burrowing owl; sage thrasher, Brewer's sparrow, northern leopard frog, Great Basin spadefoot, mystery wormwood, and Nelson's milkvetch (WNDD 2002).

### 3.3.14 Vegetation (Including Invasive Species)

Based upon 1:100,000 scale mapping, Wyoming big sagebrush is the dominant plant community within the TMRT, along the proposed access road, along the proposed overland conveyor, and adjacent to County Road 15 (U.S. Geological Survey 1996). Wyoming big sagebrush is the dominant plant community along a portion of the proposed overland conveyor and the proposed powerline (refer to Figure 3.8). Dominant species in big sagebrush plant community include Wyoming big sagebrush, black greasewood, shadscale, broom snakeweed, fringed sage, Hood's phlox, prairie Junegrass, needle-and-thread, green needlegrass, blue grama, bluebunch wheatgrass, alkali sacaton, western wheatgrass, and threadleaf sedge.

The CIAA for vegetation includes the two fifth-level watersheds that drain the TMRT--Middle Black Rock Creek and Upper Deadman Wash. Together, they have a combined drainage area of 67,815 acres (refer to Figure 3.8). Vegetation in the CIAA is composed primarily of Wyoming big sagebrush, greasewood fans and flats, and shrub-dominated riparian vegetation communities (refer to Table 3.6 and Figure 3.8). The greasewood fans and flats community type is generally found along streams on fine-textured, saline upland areas and on basin fans and flats with black greasewood comprising more than 75% of the total shrub cover. The shrub-dominated riparian type occurs along drainages where shrubs comprise more than 25% of the vegetative cover and are generally comprised of black greasewood and various sagebrush species (Merrill et al. 1996).

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Table 3.5 Wyoming BLM-sensitive Species and Habitat Preference, TMRT and CIAA, 2003.

Species			
Common Name	Scientific Name	Habitat	Likely <sup>1</sup>
<b>Mammals</b>			
Long-eared Myotis	<i>Myotis evotis</i>	Conifer and deciduous forests, caves and mines	
Fringed Myotis	<i>Myotis thysanodes</i>	Conifer forests, woodland-chaparral, caves and mine	
Spotted Bat	<i>Euderma maculatum</i>	Cliffs over perennial water, basin-prairie shrub	
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Forests, basin-prairie shrub, caves and mines	
Pygmy Rabbit	<i>Brachylagus idahoensis</i>	Basin-prairie and riparian shrub	X
White-tailed Prairie Dog	<i>Cynomys leucurus</i>	Basin-prairie shrub, grasslands	X
Wyoming Pocket Gopher	<i>Thomomys clusius</i>	Meadows with loose soil	
Idaho Pocket Gopher	<i>Thomomys idahoensis</i>	Shallow stony soils	
Swift Fox	<i>Vulpes velox</i>	Grasslands	
<b>Birds</b>			
White-faced Ibis	<i>Plegadis chihi</i>	Marshes, wet meadows	X
Trumpeter Swan	<i>Cygnus buccinator</i>	Lakes, ponds, rivers	
Northern Goshawk	<i>Accipiter gentilis</i>	Conifer and deciduous forests	
Ferruginous Hawk	<i>Buteo regalis</i>	Basin-prairie shrub, grassland, rock outcrops	X
Greater Sage-grouse	<i>Centrocercus urophasianus</i>	Basin-prairie shrub, mountain-foothill shrub	X
Long-billed Curlew	<i>Numenius americanus</i>	Grasslands, plains, foothills, wet meadows	X
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Open woodlands, streamside willow and alder groves	
Burrowing Owl	<i>Athene cunicularia</i>	Grasslands, basin-prairie shrub	X
Sage Thrasher	<i>Oreoscoptes montanus</i>	Basin-prairie shrub, mountain-foothill shrub	X
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Basin-prairie shrub, mountain-foothill shrub	X
Brewer's Sparrow	<i>Spizella breweri</i>	Basin-prairie shrub	X
Mountain Plover	<i>Charadrius montanus</i>	Shortgrass, great basin-foothills grassland, and sagebrush-grasslands	X
<b>Fish</b>			
Roundtail Chub	<i>Gila robusta</i>	Colorado River drainage, mostly large rivers, also streams and lakes	
Leatherside Chub	<i>Gila copei</i>	Bear, Snake and Green drainages, clear, cool streams and pools	
Bluehead Sucker	<i>Catostomus discobolus</i>	Bear, Snake and Green drainages, all waters	
Flannelmouth Sucker	<i>Catostomus latipinnis</i>	Colorado River drainage, large rivers, streams and lakes	
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	Colorado River drainage, clear mountain streams	
<b>Reptiles</b>			
Midget Faded Rattlesnake	<i>Crotalus viridis concolor</i>	Mountain foothills shrub, rock outcrop	
<b>Amphibians</b>			
Northern Leopard Frog	<i>Rana pipiens</i>	Beaver ponds, permanent water in plains and foothills	X
Great Basin Spadefoot	<i>Spea intermontana</i>	Spring seeps, permanent and temporary waters	X

Table 3.5 (Continued)

Species		Habitat	Likely <sup>1</sup>
Common Name	Scientific Name		
Boreal (Northern Rocky Mountain population) Toad	<i>Bufo boreas boreas</i>	Pond margins, wet meadows, riparian areas	
Spotted Frog	<i>Rana pretiosa (lutiventris)</i>	Ponds, sloughs, small streams	
<b>Plants</b>			
Meadow Pussytoes	<i>Antennaria arcuata</i>	Moist, hummocky meadows, seeps or springs surrounded by sage/grasslands 4,950-7,900 ft	
Small Rock Cress	<i>Arabis pusilla</i>	Cracks/Crevice in sparsely vegetated granite/pegmatite outcrops w/in sage/grasslands 8,000-8,100 ft	
Mystery Wormwood	<i>Artemisia biennis</i> var. <i>diffusa</i>	Clay flats and playas 6,500 ft	X
Nelson's Milkvetch	<i>Astragalus nelsonianus</i> -or- <i>Astragalus pectinatus</i> var. <i>platyphyllus</i>	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, and cushion plant communities at 5,200-7,600 ft	X
Precocious Milkvetch	<i>Astragalus proimanthus</i>	Cushion plant communities on rocky, clay soils mixed with shale on summits and slopes of white shale hills 6,800-7,200 ft	
Cedar Rim Thistle	<i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, and fine textured, sandy-shaley draws 6,700-7,200 ft	
Ownbey's Thistle	<i>Cirsium ownbeyi</i>	Sparsely vegetated shaley slopes in sage and juniper communities 6,440-8,400 ft	
Wyoming Tansymustard	<i>Descurainia torulosa</i>	Sparsely vegetated sandy slopes at base of cliffs of volcanic breccia or sandstone 8,300-10,000 ft	
Large-fruited Bladderpod	<i>Lesquerella macrocarpa</i>	Gypsum-clay hills and benches, clay flats, and barren hills 7,200-7,700 ft	
Stemless Beardtongue	<i>Penstemon acaulis</i> var. <i>acaulis</i>	Cushion plant or Black sage grassland communities on semi-barren rocky ridges, knolls, and slopes at 5,900-8,200 ft	
Beaver Rim Phlox	<i>Phlox pungens</i>	Sparsely vegetated slopes on sandstone, siltstone, or limestone substrates 6,000-7,400 ft	
Tufted Twinpod	<i>Physaria condensata</i>	Sparsely vegetated shale slopes and ridges 6,500-7,000 ft	
Green River Greenthread	<i>Thelesperma caespitosum</i>	White shale slopes and ridges of Green River Formation 6,300 ft	
Uinta Greenthread	<i>Thelesperma pubescens</i>	Sparsely vegetated benches and ridges on coarse, cobbly soils of Bishop Conglomerate 8,200-8,900 ft	
Cedar Mountain Easter Daisy	<i>Townsendia microcephala</i>	Rocky slopes of Bishop Conglomerate 8,500 ft	

<sup>1</sup> Likely to occur in or in the vicinity of the TMRT based on habitat and WNDD data (2003).

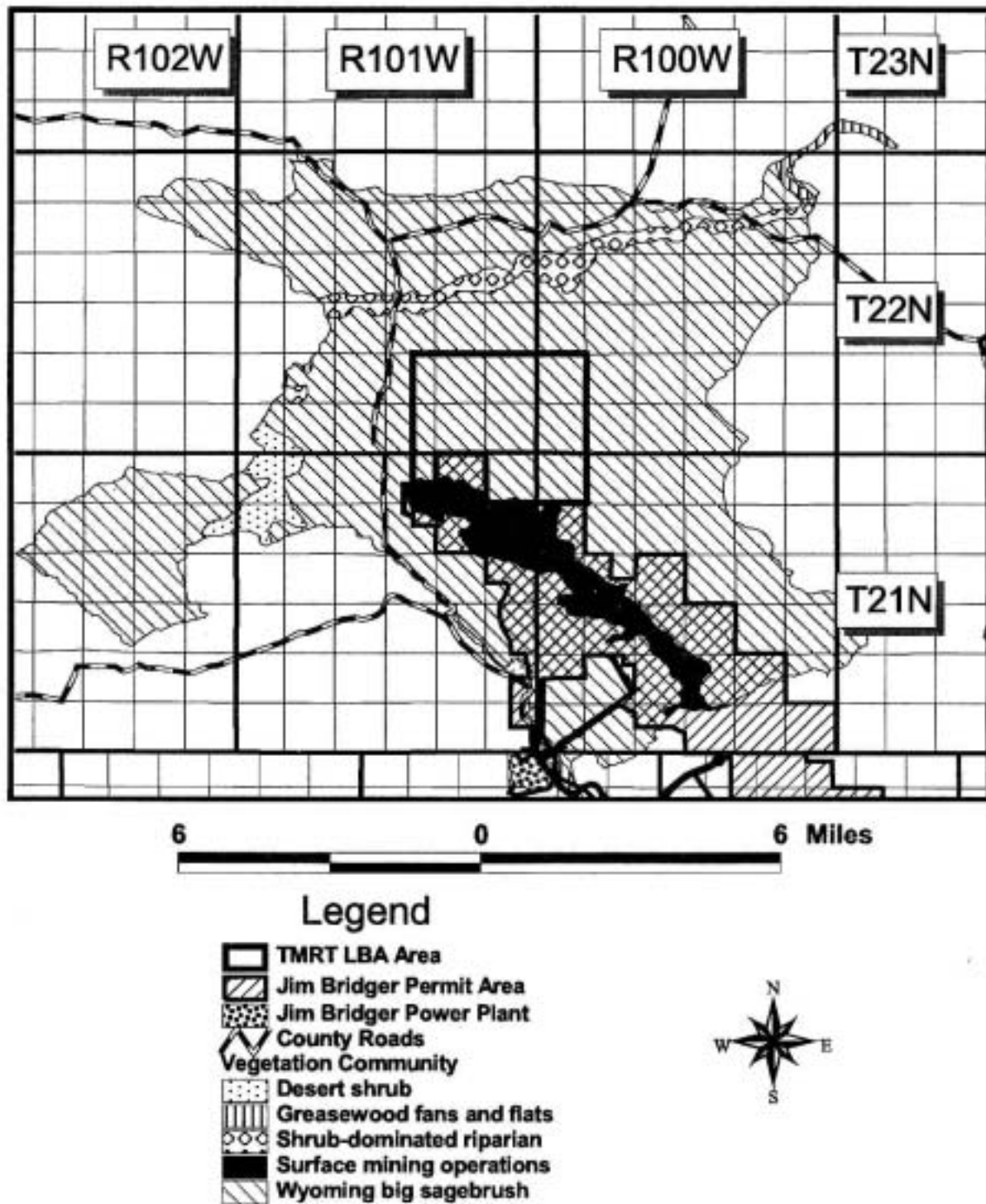


Figure 3.8 Major Vegetation Communities Within the TMRT and CIAA (as of January 2000).

Table 3.6 Major Vegetation Communities Within the TMRT and CIAA.

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Vegetation Community	Approx. % Within TMRT	Approx. % Within CIAA
Greasewood fans and flats	--	1
Open water	--	2
Shrub-dominated riparian	--	3
Surface mine operations	--	10
Wyoming big sagebrush	100	84

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Approximately 9.6% of the CIAA (6,511 acres) has been disturbed by major industrial facilities, minor industrial facilities, wells and associated facilities, and roads.

Invasive species (i.e., noxious weeds) known to exist in the vicinity of the TMRT include perennial pepperweed (*Lepidium latifolium*), hoary cress (*Cardaria* spp.), Canada thistle (*Cirsium arvense*), and dalmation toadflax (*Linaria dalmatica*) (personal communication, October 27, 2003, with Jim Cotterman, Sweetwater County Weed and Pest Control, Farson, Wyoming).

### **3.3.15 Wastes (Hazardous and Solid)**

There are no known hazardous or solid wastes present with the TMRT. Hazardous and solid wastes generated within the vicinity of the TMRT area include those generated and produced in association with surface coal mining, oil and natural gas exploration, development, and production, and activities conducted at the Jim Bridger Power Plant. Under *Resource Conservation and Recovery Act* regulations, the Jim Bridger Mine and the Jim Bridger Power Plant are both registered as a small-quantity generators. There are also two permitted and active solid waste disposal sites within the vicinity of the TMRT area, one operated by BCC and one operated by the Jim Bridger Power Plant (personal communication, April 18, 2002, with Kathy Brown, WDEQ, Solid and Hazardous Waste Division (SHWD), Lander, Wyoming).

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### **3.3.16 Water Resources**

#### **3.3.16.1 Surface Water Resources**

The TMRT straddles the Continental Divide, with approximately 56% of the TMRT located within the Great Divide Basin (this is a closed basin that does not flow out of Wyoming) and 44% of the TMRT within the Upper Green River drainage basin, a tributary of the Colorado River (refer to Figure 3.9). There are no perennial or intermittent streams or springs within the proposed TMRT. The TMRT is primarily drained by two ephemeral drainages--Middle Black Rock Creek, located north and east of the TMRT, and Upper Deadman Wash, located south of the Continental Divide. Middle Black Rock Creek drains into the Great Divide Basin, while Upper Deadman Wash drains into Bitter Creek at Point of Rocks, Wyoming, and is located within the Upper Green River Basin (refer to Figure 3.9).

The surface water that flows within Deadman Wash is highly variable in quality depending on the nature of the runoff. Runoff from snowmelt usually generates lower concentrations of total dissolved solids (TDS) and total suspended solids (TSS) than runoff from rainfall storm events. The average water quality of Deadman Wash meets WDEQ/WQD standards for livestock class of use (Class III) (BCC 2003). The TDS level averages about 3,300 parts per million (ppm), pH averages approximately 7.9, and bicarbonate averages approximately 290 ppm.

While no data are available for Black Rock Creek, water quality is expected to be similar to that of Deadman Wash.

All the ephemeral channels within the project area have been designated as having Class 4 surface water quality by WDEQ/WQD. The Class 4 designation in Chapter 1 of the WDEQ/WQD regulations means waters that cannot support fish (WDEQ/WQD 1990).

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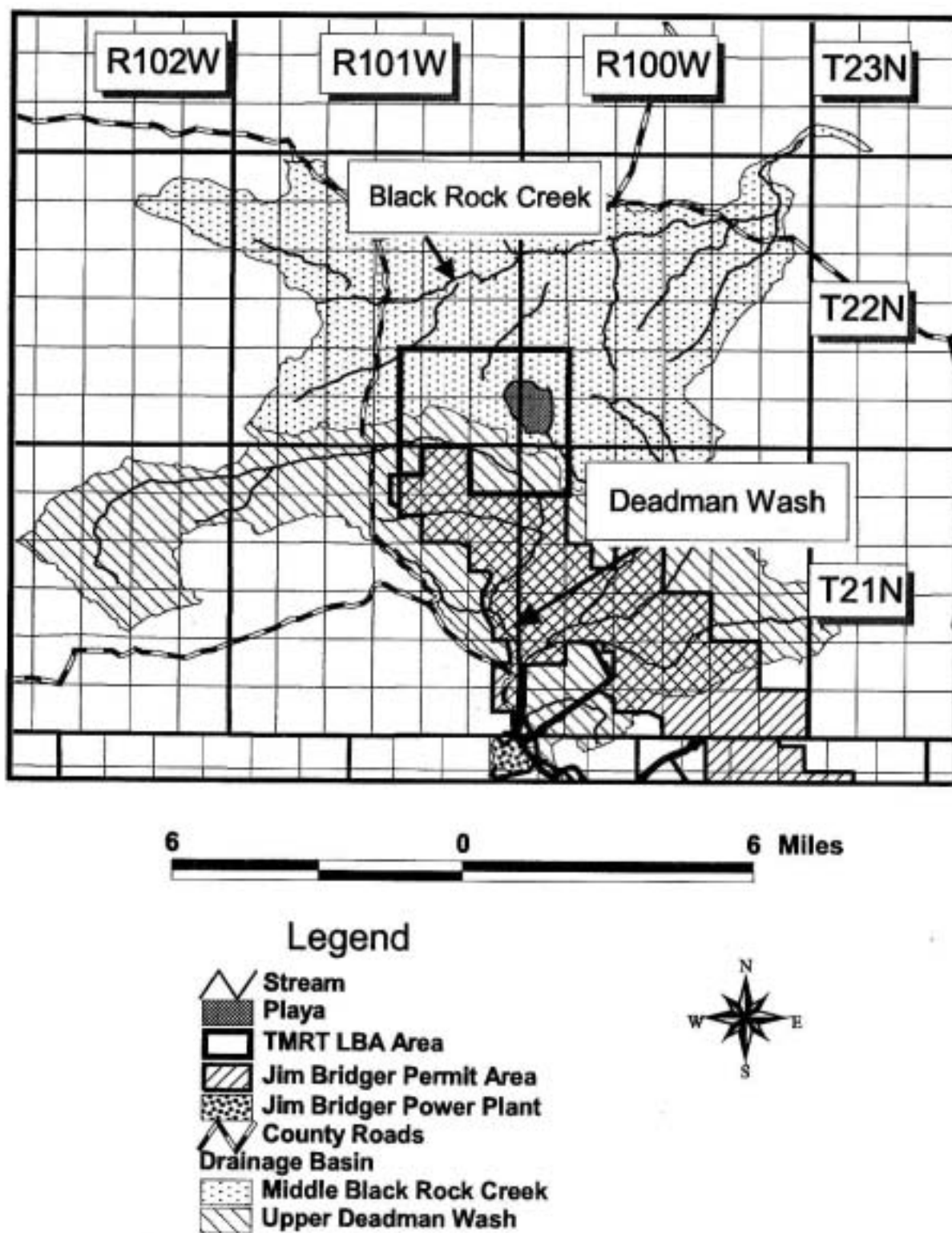


Figure 3.9 Surface Water Drainages and Features Located Within the TMRT and CIAA.

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The CIAA for surface water resources are the two fifth-level watersheds that drain the TMRT--Middle Black Rock Creek and Upper Deadman Wash. Together, they have a combined drainage area of 67,815 acres (refer to Figure 3.9). The CIAA includes approximately 93 mi of ephemeral streams and one large playa (512 acres). Approximately 9.6% of the CIAA (6,511 acres), has been disturbed by major industrial facilities, minor industrial facilities, well and associated facilities, and roads.

#### 3.3.16.2 Groundwater Resources

Groundwater within the TMRT and vicinity is contained in several aquifers. Alluvial aquifers are found in some of the surface drainage channels and aquifers of the Fort Union Formation overburden, Deadman Formation coal zone, and Lance Formation. The Fort Union Formation overburden is the only aquifer that is capable of a sustainable yield of approximately 1 gallon per minute. The upper Lance Formation, located below the Fort Union Formation, is classified as an aquitard (i.e., a leaky confining bed that transmits water at a very slow rate to or from an adjacent aquifer), even though it is a water-bearing formation. In some areas, the Continental Divide appears to affect the piezometric surface of these aquifers; however, in general the regional groundwater flow is in a northeasterly direction (BCC 2003).

The proposed underground mine would likely intercept groundwater contained in the Deadman coal zone of the Fort Union Formation. The Fort Union Formation is approximately 1,500 ft thick in the area of the TMRT. Except for water used by BCC for exploration drilling, there are no known groundwater appropriations (i.e., water rights) issued by the WSEO for use of groundwater from the Deadman coal zone aquifer within the vicinity of the TMRT. BCC has appropriations for groundwater rights for portions of the Deadman coal zone aquifer located within the existing surface mining operation (BCC 2003).

The groundwater quality from wells within the BCC mine area within the Deadman coal zone aquifer indicates an average TDS of 1,711 ppm, bicarbonate of 664 ppm, and sulfur of 656 ppm. The pH of the groundwater average approximately 8.0. Average water quality of the Fort Union

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aquifer meets WDEQ/WQD standards for agricultural use (Class II) (WDEQ/WQD 1993; BCC 2003).

The closest surface expression of groundwater to the TMRT is at Radar Springs, approximately 1 mi northwest of the tract.

The Ericson Formation (that would serve as one of the water sources for the Proposed Action) is located approximately 2,400 ft below the surface of the TMRT area. The Ericson Formation is a member of the Mesaverde group and is composed primarily of sandstone with some shale lenses and is approximately 600 ft thick in the general area. The Ericson Formation dips approximately 3 to 4 degrees to the northeast. It is estimated that the Ericson Formation in this area has a transmissivity of 14,000 gallons/day/ft and a storage coefficient of  $8 \times 10^{-4}$ . (personal communication March 30, 2004, with George Hoffman, hydrologist, Hydro-Engineering, LLC, Casper, Wyoming).

The Town of Superior has drilled, completed, and operates two water wells in the Ericson Formation updip of the TMRT area and the Bridger No. 1 well (refer to Figure 3.10). Both of these wells are located in NE ¼ of Section 26, T 21N, R101W, approximately 15,000 ft south of the TMRT area. These wells are the primary (but not sole) source of drinking water for the community. Superior No. 17 well is approximately 1,070 ft deep and has a pumping capacity of 150 gallon and Superior No. 18 well is approximately 1,700 ft deep and has a pumping capacity of 350 gallons per minute. A third well (Superior No. 19) at the same location has been drilled and completed into the Almond Formation (located above the Ericson Formation). This well should not be impacted by either mine dewatering operations or by the operation of the Bridger No. 1 well; therefore, no further discussion on this well is included in this analysis.

### **3.3.17 Wetlands/Riparian Areas**

A jurisdictional wetland inventory of the TMRT area was completed in 2002 and determined that there are no jurisdictional wetlands within the TMRT area (Intermountain Resources 2002).

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While the inventory has been completed, it has not been formally submitted to the U.S. Army Corps of Engineers for a formal review and determination.

The CIAA for wetland resources are the two fifth-level watersheds that drain the TMRT--Middle Black Rock Creek and Upper Deadman Wash. Together, they have a combined drainage area of 67,815 acres (refer to Figure 3.11). The CIAA includes approximately 100 acres of potential wetlands that are composed of palustrine temporarily flooded (USFWS wetland classification PUSA), lacustrine/limnetic (USFWS wetland classification L1) and lacustrine/littoral (USFWS wetland classification L2). In addition, there is a total of 34 mi of ephemeral streams (USFWS wetland classification R4SB) and adjacent wetlands (USFWS wetland classification PEM, PSS, and PUS) (USFWS 1997) (refer to Figure 3.10). Approximately 9.6% of the CIAA (6,511 acres) has been disturbed by major industrial facilities, minor industrial facilities, wells and associated facilities, and roads.

### **3.3.18 Wild Horses**

The TMRT is located within the Great Divide Basin Wild Horse Herd Management Area (GDBWHMA) (refer to Figure 3.12). The GDBWHMA encompasses 778,915 acres, of which 73% is public land. The GDBWHMA is located from the Rawlins-Rock Springs District boundary west to the Continental Divide. The "herd-appropriate management level" for the Great Divide Basin herd is between 415 to 600 wild horses, and the herd is currently estimated to have approximately 500 wild horses (personal communication, October 30, 2003, with Kevin Lloyd, Range Conservationist/Wild Horse Specialist, BLM, Rock Springs Field Office, Wyoming).

The CIAA for wild horses is the GDBWHMA. Approximately 2.4% or 18,360 acres of the CIAA has been disturbed. Approximately 10,674 acres within the CIAA have been disturbed by major industrial facilities, 3,672 acres by minor industrial facilities, 3,404 acres by roads, and 610 acres by wells and associated facilities.

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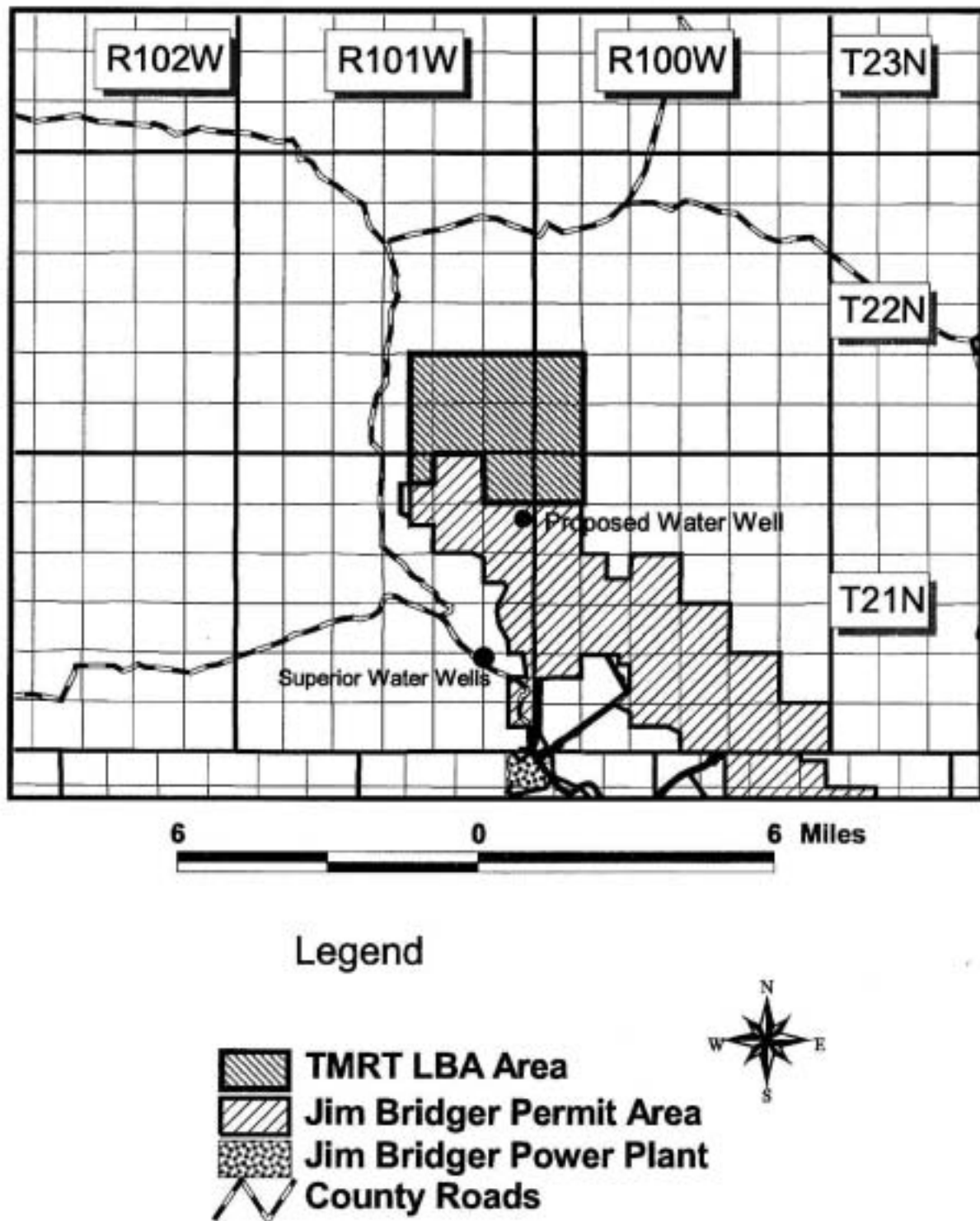


Figure 3.10 Production Water Wells.

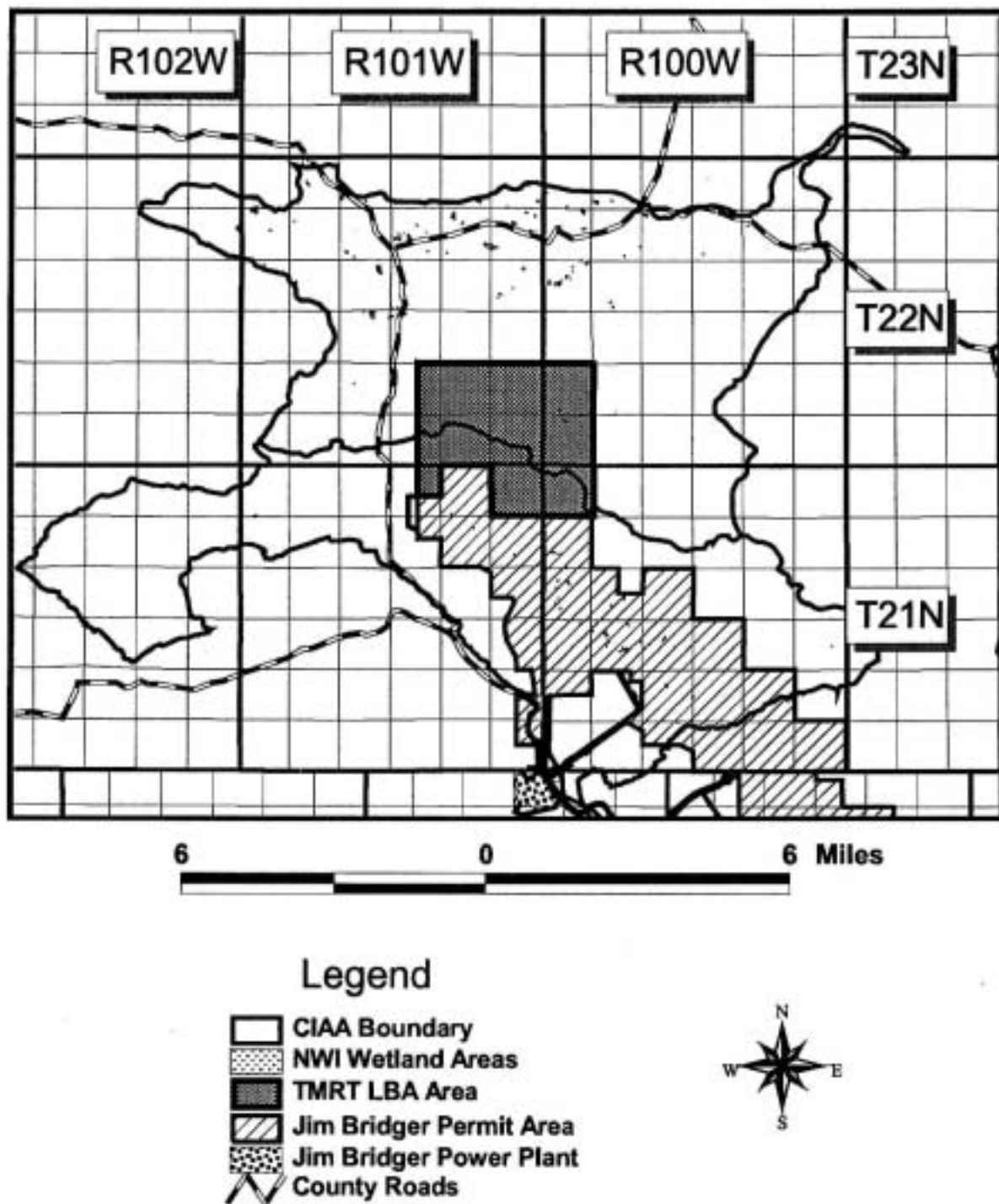


Figure 3.11 Potential Wetlands Located Within the TMRT and CIAA (as of 1983).

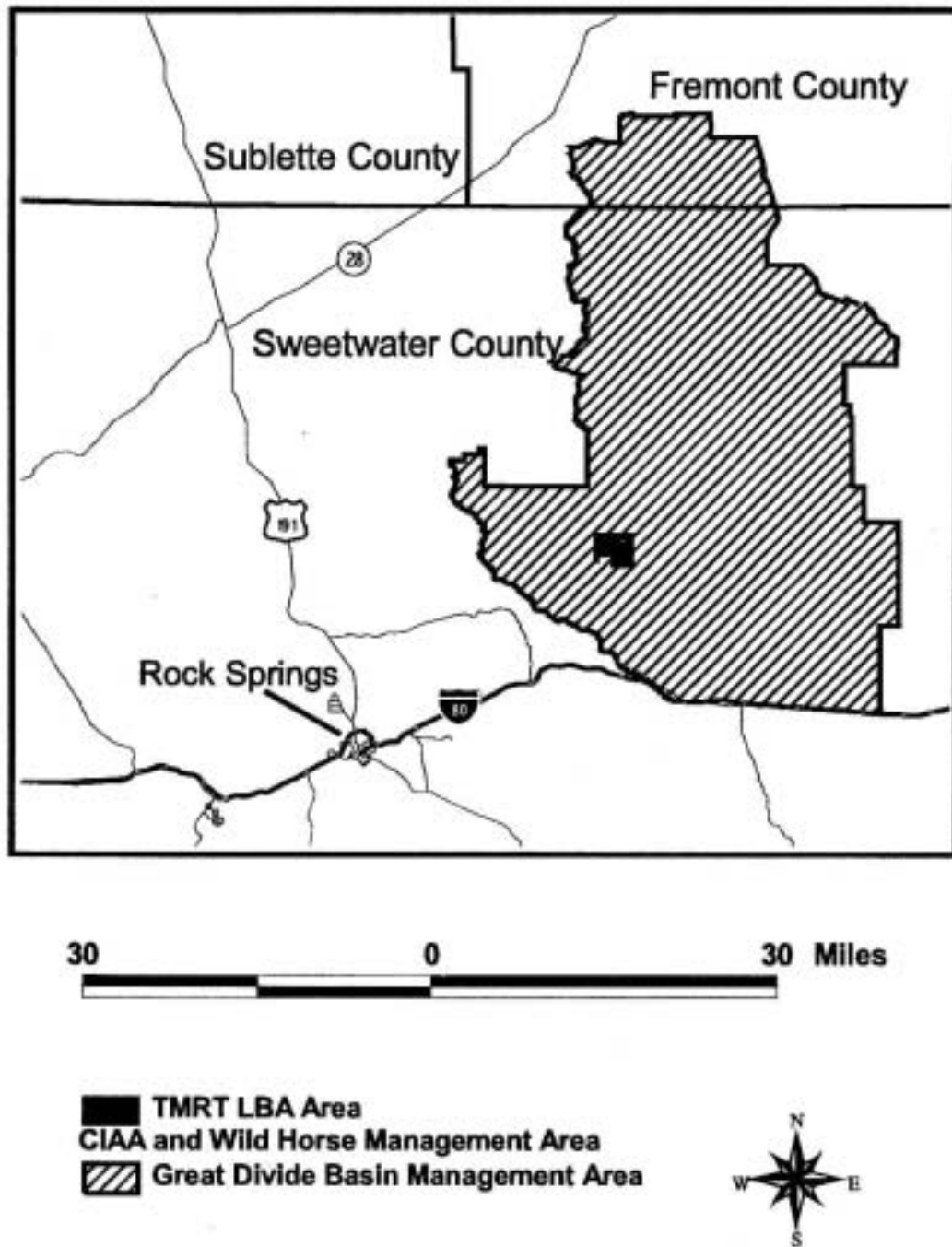


Figure 3.12 Great Divide Basin Wild Horse Herd Management Area.

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### **3.3.19 Wildlife**

Wildlife surveys (such as aerial big game surveys, driving surveys, greater sage-grouse lek surveys, raptor nest surveys, etc.) have been conducted for more than 20 years at the Jim Bridger Mine. Results of the baseline and annual monitoring surveys are reported in permit documents and annual reports submitted to WDEQ/LQD. Some of the surveys were also conducted within a 2-mi buffer surrounding BCC's current permit boundary that overlaps with portions of the TMRT. Additional complete surveys of the TMRT were conducted by BCC in 2001 during the exploratory drilling of the TMRT. Wildlife species composition within the TMRT is anticipated to be generally comparable to those found on the adjacent Jim Bridger Mine, except that no water fowl and shorebirds are expected in the TMRT.

#### **3.3.19.1 Big Game**

Three big game species--pronghorn antelope, mule deer, and elk--occur within or immediately adjacent to the TMRT. The population estimates for big game herds provided below are based upon WGFD models presented in the most recent annual big game herd unit report (WGFD 2003).

Pronghorn Antelope. Pronghorn antelope in the proposed project area belong to the Red Desert Pronghorn Antelope Herd (herd unit 615). The Red Desert Pronghorn Antelope Herd had a 2002 postseason population estimate of 14,000 antelope, approximately 93% of the population objective of 15,000 animals (WGFD 2003). The 5-year (1997-2001) population average was 14,890 animals (99% of objective) (WGFD 2003).

Approximately 1,726 acres or 29% of the TMRT is habitat the WGFD has designated as crucial winter/yearlong antelope range (WGFD 2003), and the remaining 71% is designated as winter/yearlong habitat (refer to Figure 3.13). The proposed new access road would be constructed in winter/yearlong habitat, whereas the conveyor and powerline would be constructed in crucial antelope winter range.

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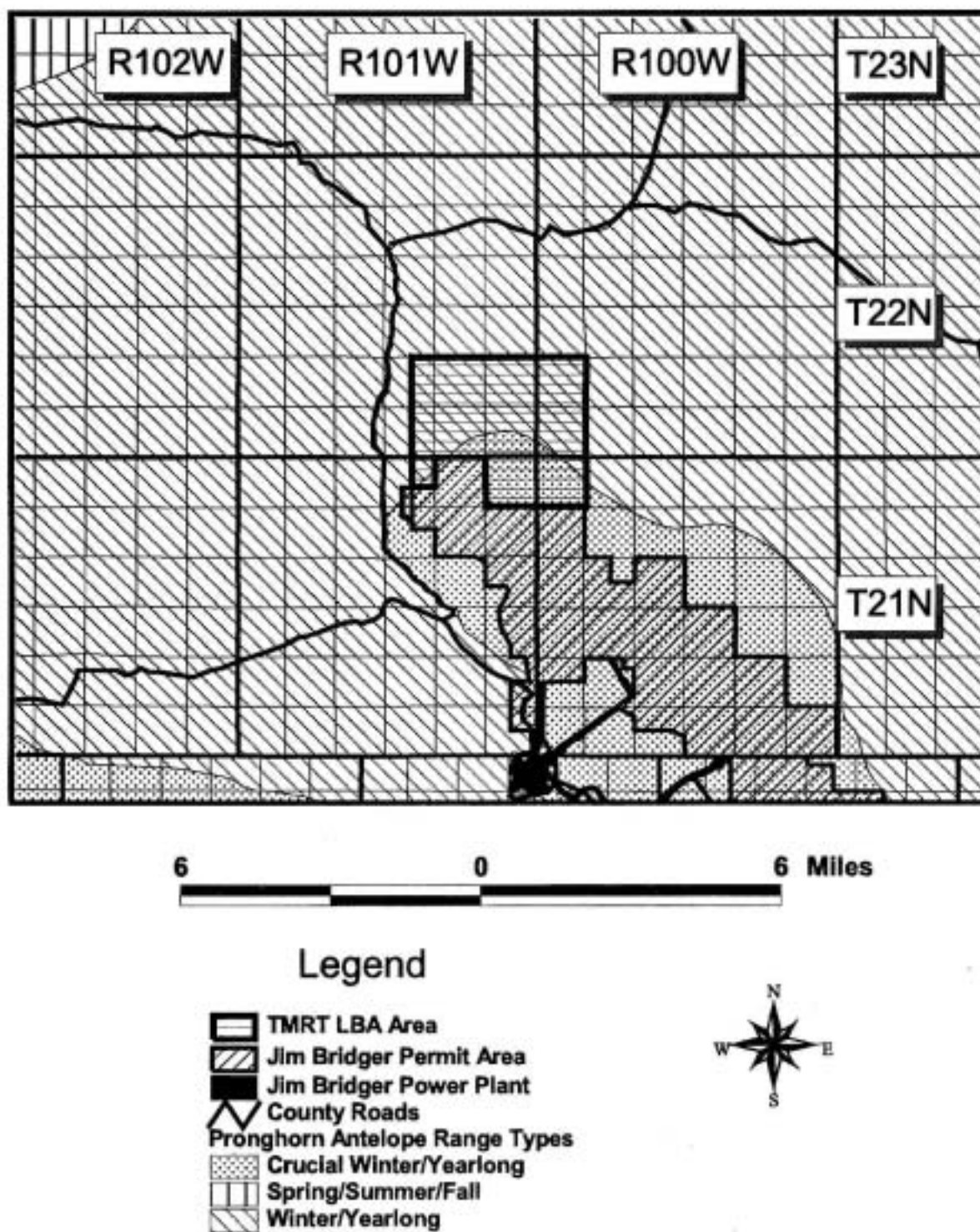


Figure 3.13 Pronghorn Antelope Range Within the TMRT.

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The CIAA for pronghorn antelope is the entire Red Desert herd unit which encompasses approximately 2,167,479 acres (refer to Figure 3.14). Approximately, 85% of the CIAA is located in winter/yearlong range, 13% is located in crucial winter/yearlong range, and 2% is located in spring/summer/fall range (refer to Figure 3.14). Approximately 1.52% of the CIAA (32,983 acres) has been disturbed by major industrial facilities, minor industrial facilities, roads, and well and associated facilities. Within the range designated as crucial winter/yearlong range, approximately 14,101 acres have been disturbed by major industrial facilities, minor industrial facilities, roads, and wells and associated facilities. This represents approximately 5.17% of all crucial winter/yearlong range within the CIAA.

Mule Deer. Mule deer within the TMRT belong to Steamboat Mule Deer herd unit (herd unit 430). The core of this population inhabits the canyons and mesas associated with Steamboat Mountain and Oregon Butte north of the TMRT. Another segment of the population inhabits the Green River riparian zone west of the TMRT. The Steamboat Mule Deer Herd had a 2002 posthunting season population estimate of 3,100 mule deer, approximately 78% the population objective of 4,000 animals (WGFD 2003). The 5-year (1997-2001) population average was 3,120 animals (78% of objective) (WGFD 2003).

All of the TMRT and project-related support facilities (access road, powerline, and conveyor) would be located in habitat the WGFD has designated as winter/yearlong mule deer range (WGFD 2003). No mule deer crucial winter range occurs within the TMRT (refer to Figure 3.14) (WGFD 2003).

The CIAA for mule deer is the entire Steamboat herd unit, which encompasses approximately 2,553,133 acres (refer to Figure 3.15). Approximately, 25% of the CIAA is located in winter/yearlong range, 8% is located in crucial winter/yearlong range, and 4% is located in spring/summer/fall range (refer to Figure 3.15). The remaining 62% of the CIAA does not contain enough animals to be important habitat or the habitats are of limited importance to this species and is designated by the WGFD as "out" (refer to Figure 3.16). Approximately 1.7% of

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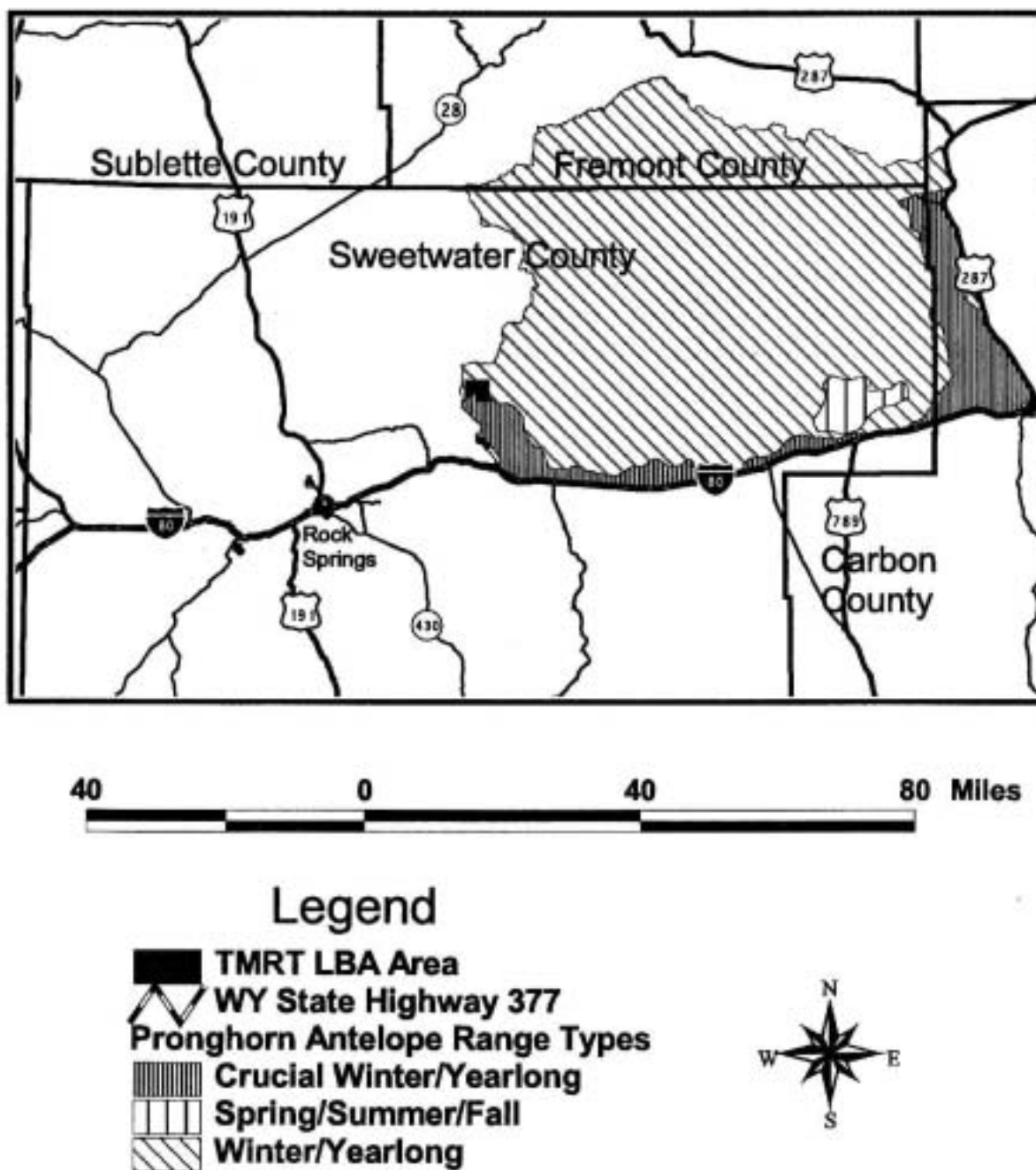


Figure 3.14 Pronghorn Antelope Range Within the CIAA.

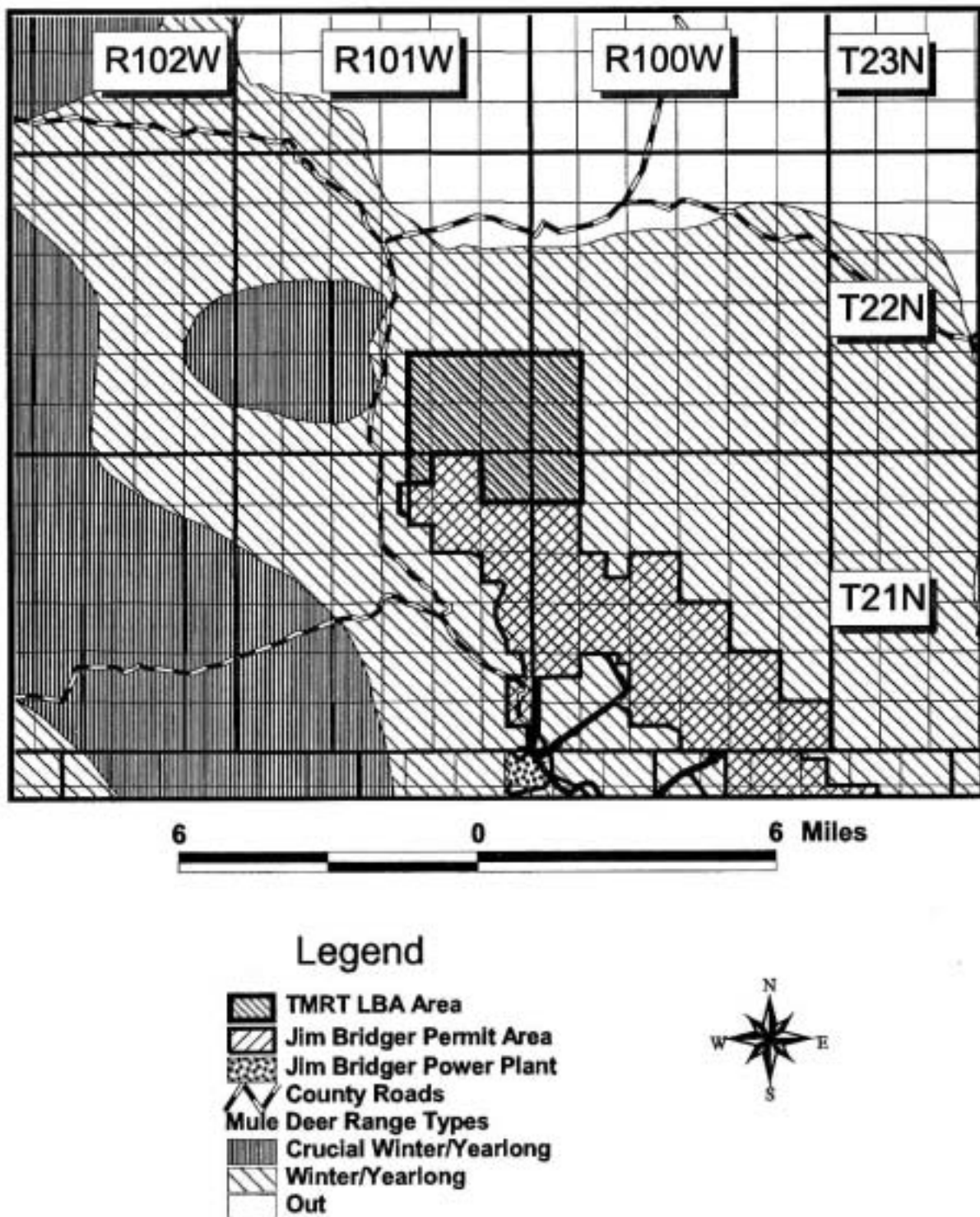


Figure 3.15 Mule Deer Range Within the TMRT and Vicinity.

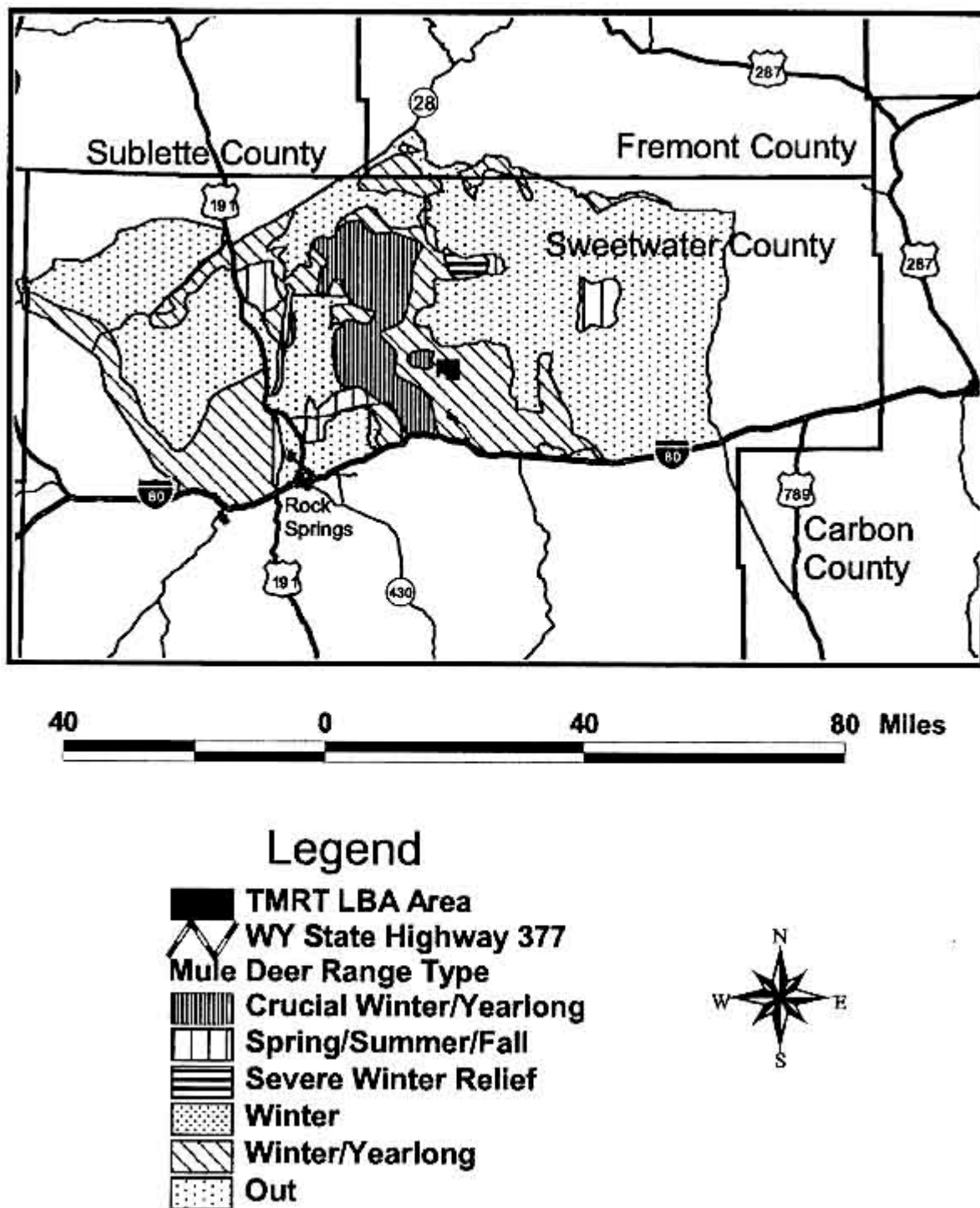


Figure 3.16 Mule Deer Range Within the CIAA.

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the CIAA (44,168 acres) has been disturbed by major industrial facilities, minor industrial facilities, roads, and well and associated facilities. Within the range designated as crucial winter/yearlong range, approximately 3,503 acres have been disturbed by major industrial facilities, minor industrial facilities, roads, and wells and associated facilities. This represents approximately 1.7% of all of the crucial winter/yearlong range within the CIAA.

Elk. Elk within the TMRT belong to Steamboat Elk herd unit (herd unit 426). This herd unit occupies the area north of Rock Springs, east of Green River, south of Wyoming Highway 28 and the Sweetwater River, and west of Wamsutter. This unique elk herd exists almost entirely on the sagebrush desert ecosystem as there is little conifer or aspen habitat available for use by the elk that inhabit this area year-round (WGFD 2003). At the December 2002 meeting of the Wyoming Game and Fish Commission, the commission revised the population objective from 500 animals to 1,200 animals for the Steamboat Elk herd unit. This is an increase of 140% above the previous population objectives as of the end 2001. The Steamboat Elk Herd had a 2002 postseason population estimate of 1,660 elk, approximately 138% of the population objective of 1,200 animals (WGFD 2003). The 5-year (1997-2001) population average was 1,750 animals (146% of population objective) (WGFD 2003).

Approximately 70% of the TMRT is designated by the WGFD as winter/yearlong elk range (WGFD 2003), and approximately 30% of the TMRT is designated as yearlong range (refer to Figure 3.17). The proposed access road and conveyor would be located within habitats that are of limited importance to this species. No crucial winter range for elk occurs within the TMRT. The nearest elk crucial range is located approximately 5.0 mi east of the proposed project (refer to Figure 3.17).

The CIAA for elk is the entire Steamboat herd unit which encompasses approximately 2,649,306 acres (refer to Figure 3.18). Approximately 13% is located in spring/summer/fall range, 11% of the CIAA is located in crucial winter range or crucial winter/yearlong range, 9% in winter/yearlong range, 7% in winter range, and 2% in yearlong range (refer to Figure 3.8). The

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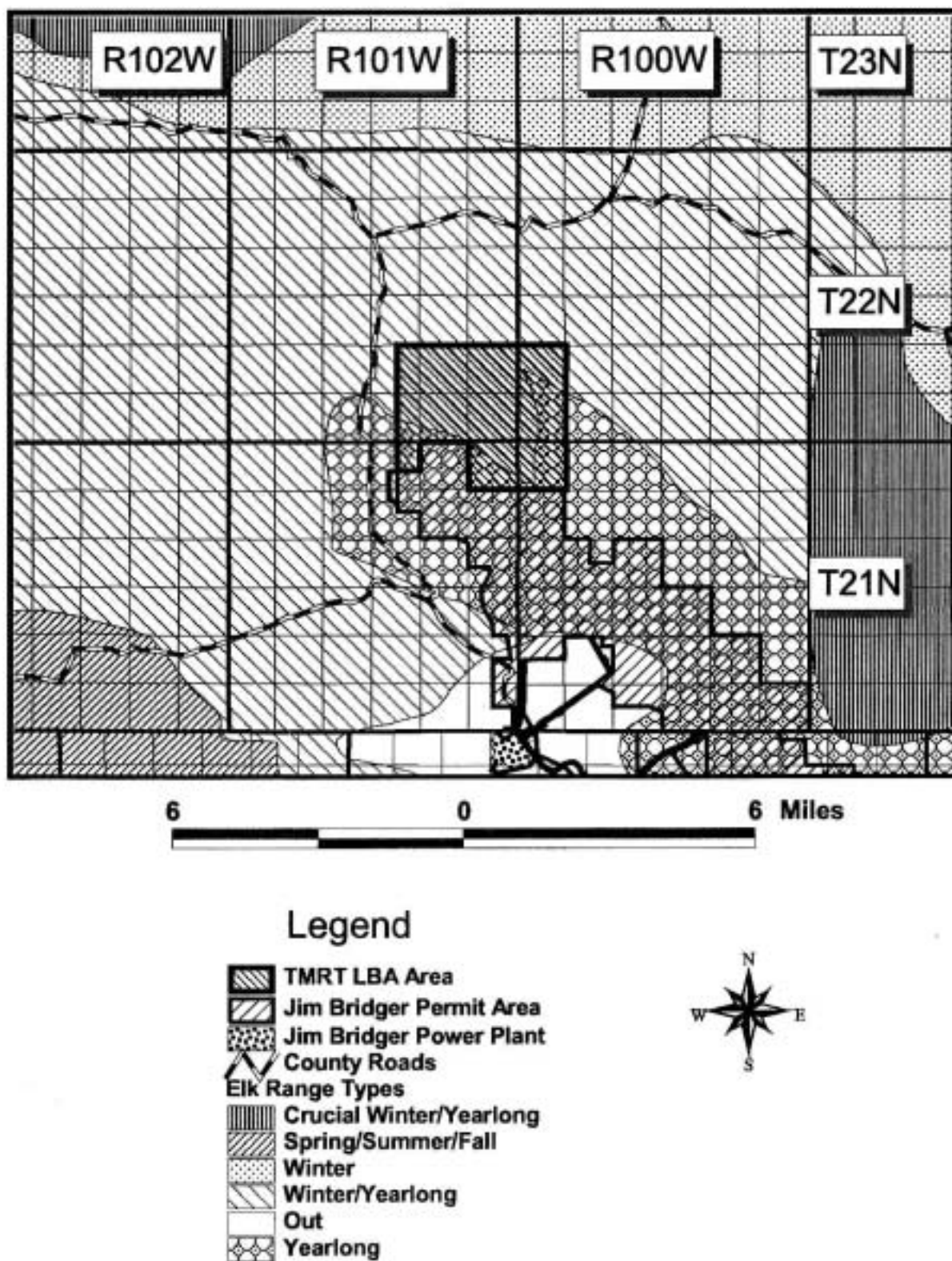


Figure 3.17 Elk Range Within the TMRT and Vicinity.

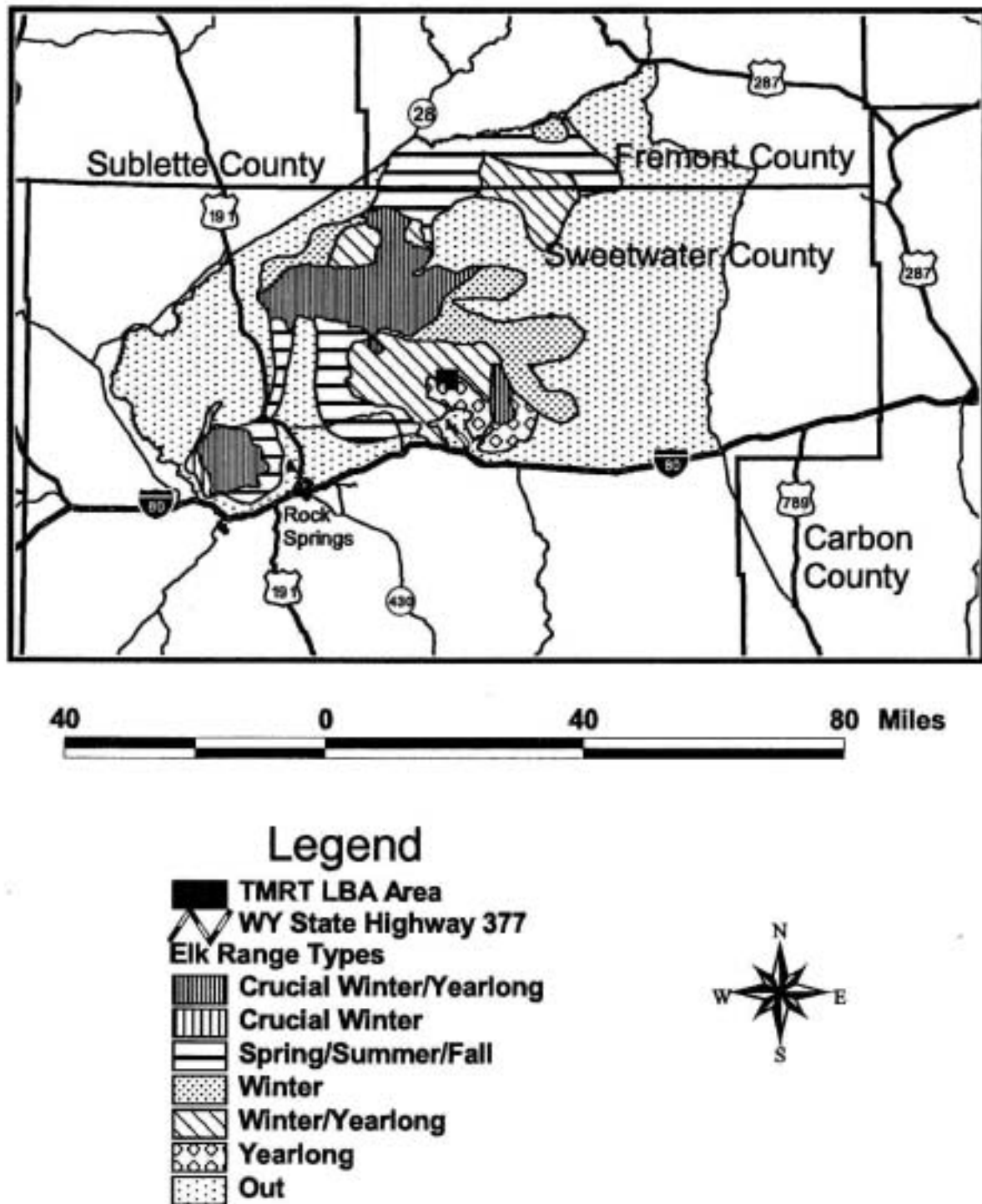


Figure 3.18 Elk Range Within the CIAA.

remaining 58% of the CIAA does not contain enough animals to be important habitat or the habitats are of limited importance to this species and is designated by the WGFD as "out" (refer to Figure 3.18). Approximately 1.6% of the CIAA (43,356 acres) has been disturbed by major industrial facilities, minor industrial facilities, roads, and well and associated facilities. Within the range designated as crucial winter range or crucial winter/yearlong range, approximately 1,873 acres have been disturbed by major industrial facilities, minor industrial facilities, roads, and wells and associated facilities. This represents approximately 0.6% of all crucial winter and crucial winter/yearlong range within the CIAA.

#### 3.3.19.2 Other Mammals

Predators known to occur or to potentially occur in the TMRT and CIAA are coyote, red fox, raccoon, ermine, long-tailed weasel, badger, western spotted skunk, striped skunk, mountain lion, and bobcat. Lagomorph species include desert cottontail, mountain (Nuttall's) cottontail, and white-tailed jackrabbit. Squirrels known to occur or to potentially occur include least chipmunk, Wyoming ground squirrel, golden-mantled ground squirrel, and thirteen-lined ground squirrel. Other rodents include four species of pocket gopher (northern, plains, Merriam's, and Great Basin), two species of pocket mouse (olive-backed and northern), Ord's kangaroo rat, deer mouse, northern grasshopper mouse, bushy-tailed woodrat, six species of vole (western, heather, meadow, long-tailed, prairie, and sagebrush), and western jumping mouse. Bats (western small-footed, long-eared, fringed, long-legged, little brown, and silver-haired) may also occur (WGFD 1999).

#### 3.3.19.3 Raptors

Raptor species known to occur or potentially to occur within the TMRT and CIAA include bald eagle (addressed in Section 3.3.12.2), peregrine falcon, golden eagle, prairie falcon, American kestrel, merlin, Swainson's hawk, ferruginous hawk, red-tailed hawk (winter resident), northern harrier, rough-legged hawk, great horned owl, burrowing owl, and short-eared owl (WGFD 1999; BCC 2003; BLM 2002b).

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Historically, portions of the TMRT have been included in the annual raptor monitoring surveys conducted for BCC's current surface coal mine operation. Raptor surveys were also conducted in 2003 within the entire TMRT or adjacent to the TMRT to determine the occupancy and productivity of individual raptor nests. Nine raptor nests are located within the TMRT; seven of these nests were identified as ferruginous hawk nests and two were identified as red-tailed hawk nests (refer to Figure 3.19) (BCC 2003). Only one of the nests (a red-tailed hawk) within the TMRT was active in 2003 (BCC 2003).

The CIAA for raptors includes the TMRT area and a 2-mi buffer (30,366 acres). There are approximately 31 raptor nest sites within the CIAA, and many of these sites have been or are currently being monitored annually for occupancy and productivity by personnel from BCC for the Jim Bridger Mine and Black Butte Coal Company for the Leucite Hills Mine (refer to Figure 3.19). Of the 31 known raptor nests in the CIAA, five were determined to be active in 2003 (BCC 2003). Within the CIAA for raptors, there is approximately 3,536 acres of existing disturbance; 2,667 acres of disturbance due to major industrial facilities, 707 acres due to minor industrial facilities, and 162 acres due to roads. This represents 11.6% of the total area of the CIAA.

#### 3.3.19.4 Upland Game Birds

The proposed project area is located within WGFD upland game bird management area number 7. Mourning dove is the only upland game bird species other than greater sage-grouse likely to occur on and adjacent to the proposed project area (BCC 2003).

Two greater sage-grouse leks are known to occur with the TMRT (Figure 3.20), of which one was found to be occupied by grouse in 2003 (BCC 2003; WGFD 2003).

The CIAA for upland bird species encompasses 946,912 acres and includes portions of Upland Game Management Area 7 (WGFD 2003) and Lower Green River Basin Sage Grouse Conservation Planning area (WGFD2003) north of Interstate 80, east of Wyoming Highway 191,

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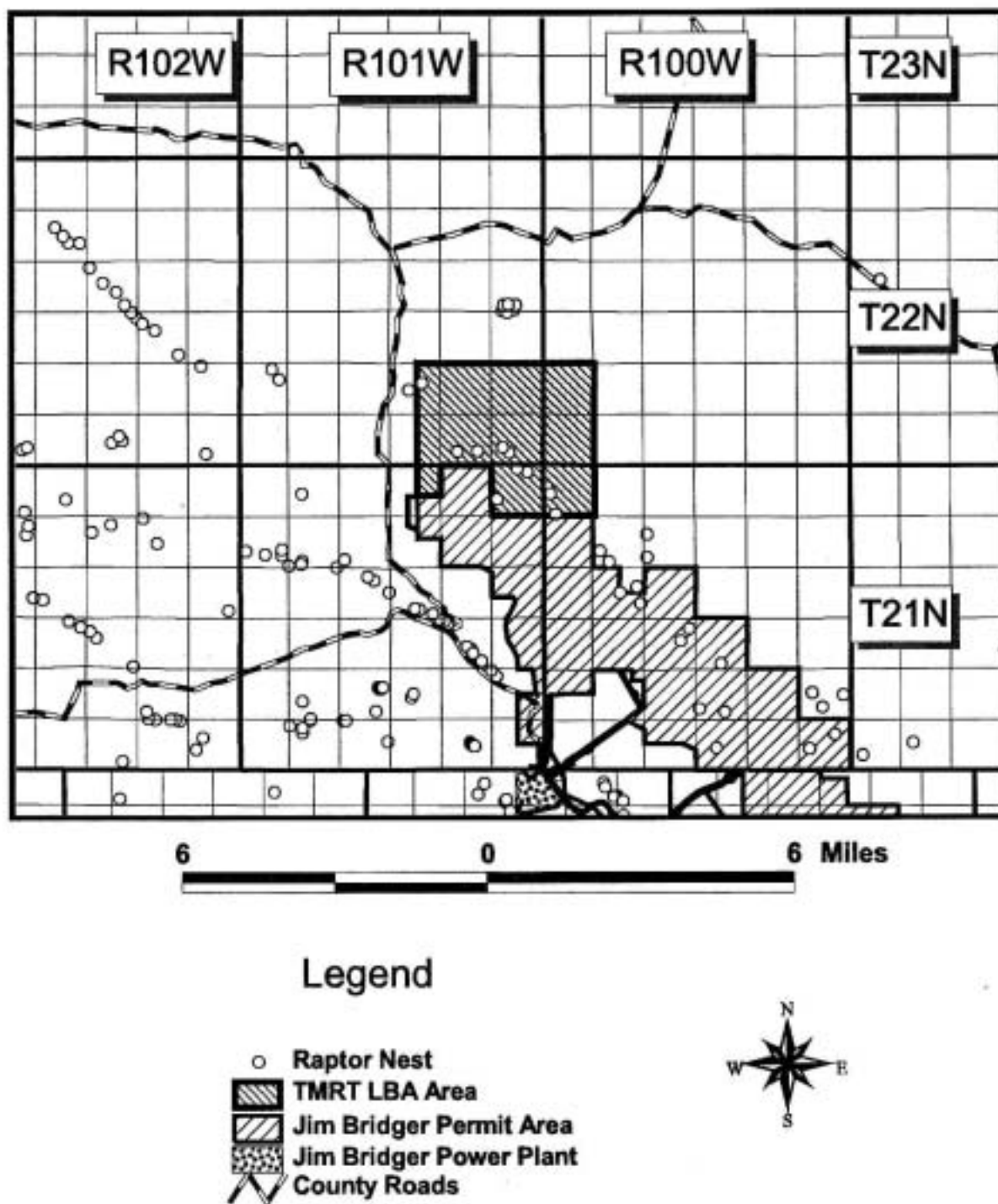


Figure 3.19 Raptor Nests Within the TMRT and Vicinity.

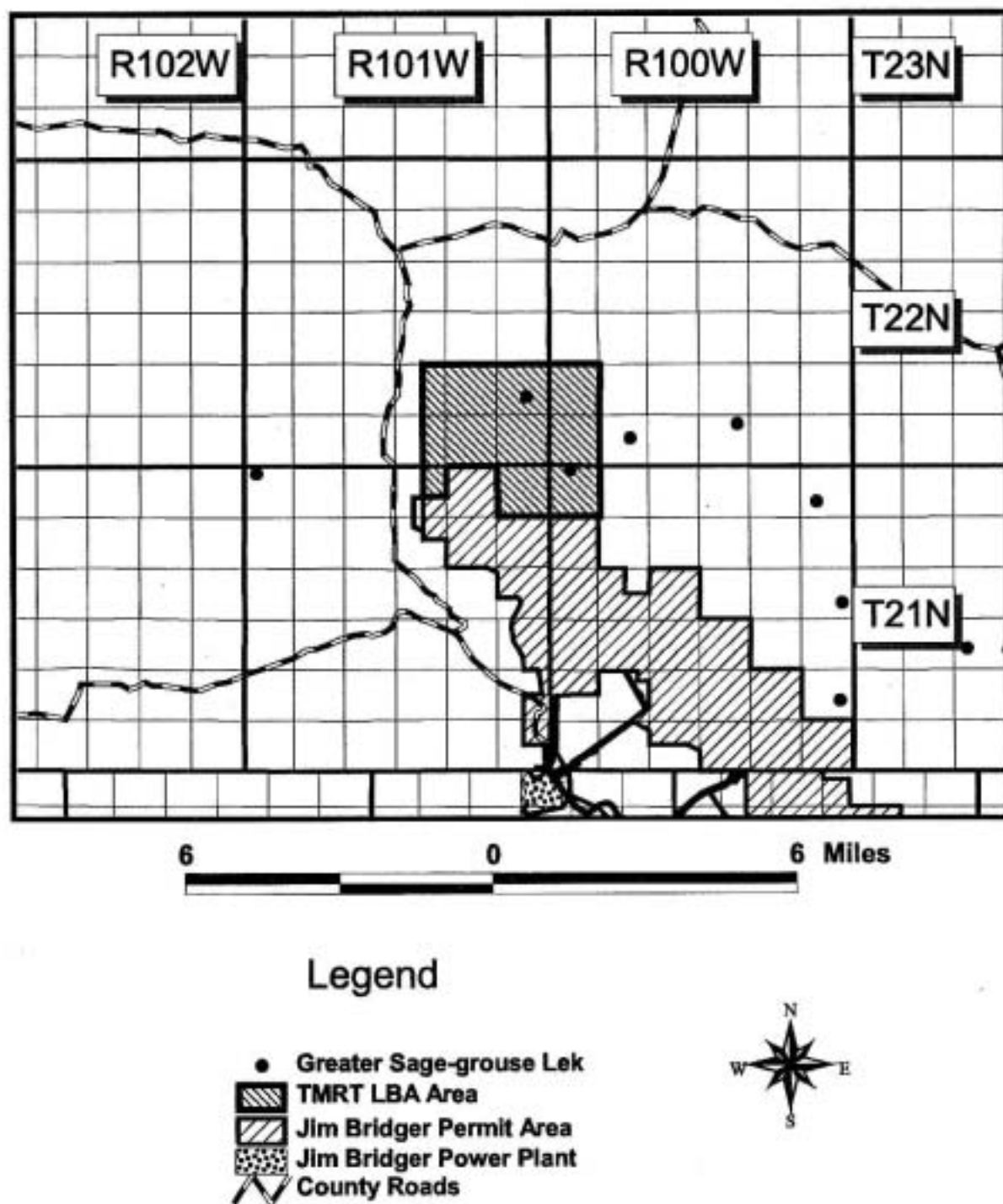


Figure 3.20 Greater Sage-grouse Leks Within the TMRT.

and south of Wyoming Highway 28 (refer to Figure 3.21). The CIAA contains 43 known greater sage-grouse leks (WGFD 2003). Thirty-six of the leks in the CIAA were monitored in 2003, and 16 (44%) were found to contain birds (WGFD Green River District n.d.). Approximately 2.2% of the CIAA (20,899 acres) has been disturbed by major industrial facilities, minor industrial facilities, cities, roads, and wells and associated facilities.

### 3.3.19.5 Other Birds

Bird species potentially occurring within the TMRT, based upon range and habitat preference, include common nighthawk, Say's phoebe, western kingbird, horned lark, swallows (e.g., violet-green, barn, cliff), black-billed magpie, common raven, American crow, rock wren, mountain bluebird, loggerhead shrike, Brewer's sparrow, vesper sparrow, savannah sparrow, sage sparrow, lark bunting, McCown's longspur, red-winged blackbird, western meadowlark, Brewer's blackbird, common grackle, green-tailed towhee, and brown-headed cowbird (WGFD 1999).

Since there are no permanent surface water bodies within the TMRT, it is unlikely that waterfowl and shorebirds would nest in the TMRT area; however, several species of waterfowl and wading/shore birds may seasonally utilize the playa located within the TMRT area, the flue gas-desulfurization or evaporation ponds located south of the TMRT. The nearest potential waterfowl and shorebird nesting habitat is likely located along the Deadman Wash and lakes and ponds associated with the Jim Bridger Power Plant south of the TMRT.

The CIAA for other birds encompasses the TMRT area and a 4.3-mi buffer area around the TMRT area and includes a total of approximately 78,200 acres. Waterfowl species likely to occur in the CIAA include common loon, pied-billed grebe, horned grebe, western grebe, Clark's grebe, eared grebe, white pelican, double-breasted cormorant, American coot, Canada goose, mallard, green-winged teal, northern pintail, blue-winged teal, cinnamon teal, northern shoveler, redhead, ring-necked duck, goodwill, American wigeon, and common merganser (WGFD 1999). Within the CIAA, there is a total of 6,308 acres of existing disturbance. Major industrial facilities account for 4,661 acres of disturbance, roads account for 385 acres of disturbance, and minor industrial facilities account for 1,262 acres of disturbance.

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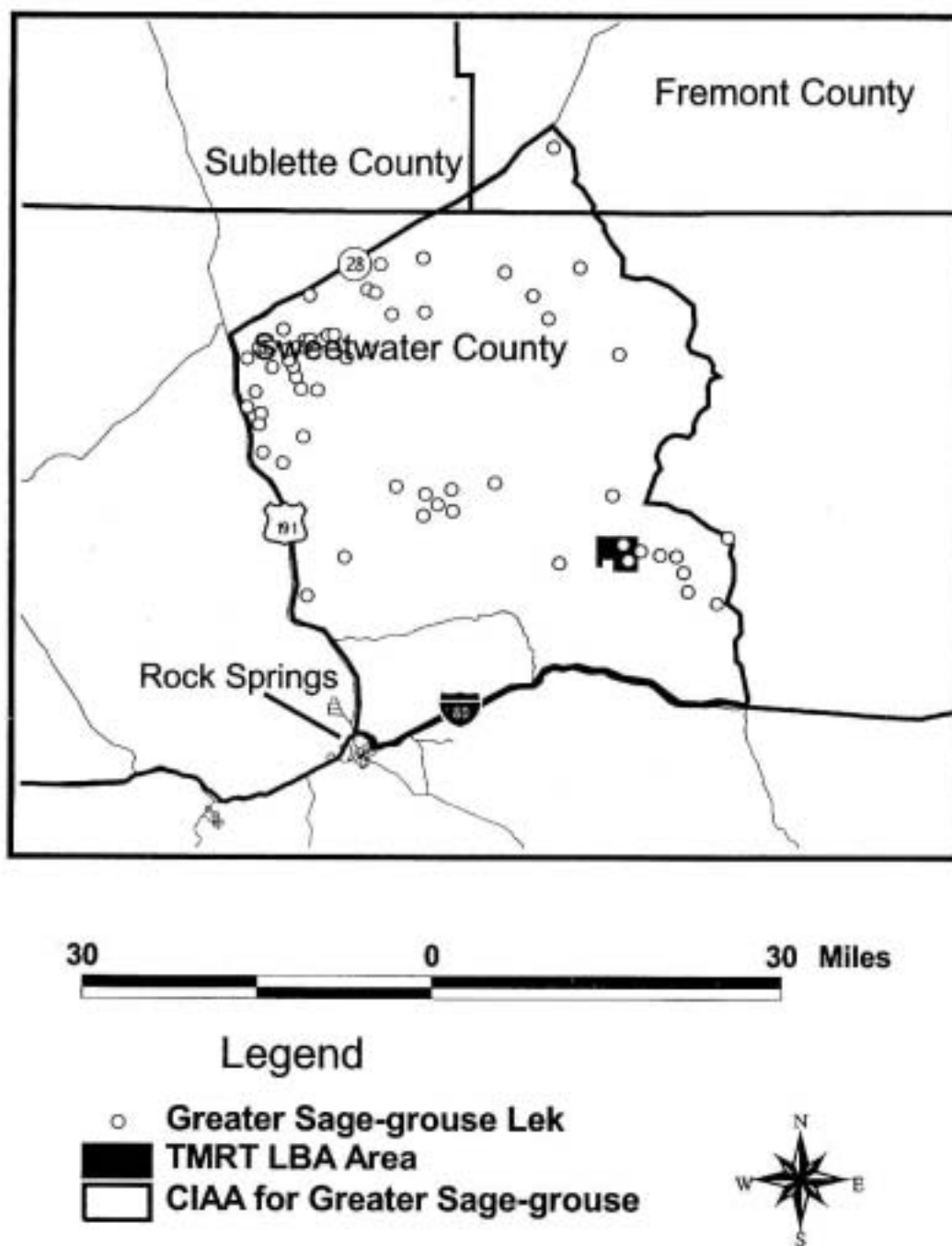


Figure 3.21 Greater Sage-grouse Leks Within the CIAA.

#### 3.3.19.6 Amphibians, Reptiles, and Fish

Based on range and habitat preference, few if any amphibians or reptiles would be found within the TMRT. Due to the lack of permanent water bodies or perennial streams, the TMRT would not support any fish populations.

The CIAA for amphibians, reptiles, and fish encompasses the TMRT area and a 4.3-mi buffer area around the TMRT area and includes a total of approximately 78,200 acres. Several amphibian and reptile species are known to or may occur within the Deadman Wash located south of the TMRT area. Amphibians include tiger salamander, western toad, striped chorus frog, northern leopard frog, and Great Basin spadefoot, all of which may occur primarily in and adjacent to aquatic habitats within the lower portions of the Deadman Wash below of the TMRT. Reptile species include eastern short-horned lizard, racer, northern sagebrush lizard, prairie rattlesnake, Great Basin gopher snake, western rattlesnake, and valley garter snake (BCC 2003; WGFD 1999). None of the streams, draws, and washes within the CIAA are known to support any permanent fish populations (WGFD 1991). Within the CIAA, there is a total of 6,308 acres of existing disturbance. Major industrial facilities account for 4,661 acres of disturbance, roads count for 385 acres of disturbance, and minor industrial facilities account for 1,262 acres of disturbance.

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